OLIVETTI

Customer Engineering Service

LETTERA 36

Features and Specifications

Operation and Adjustments

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I N D E X

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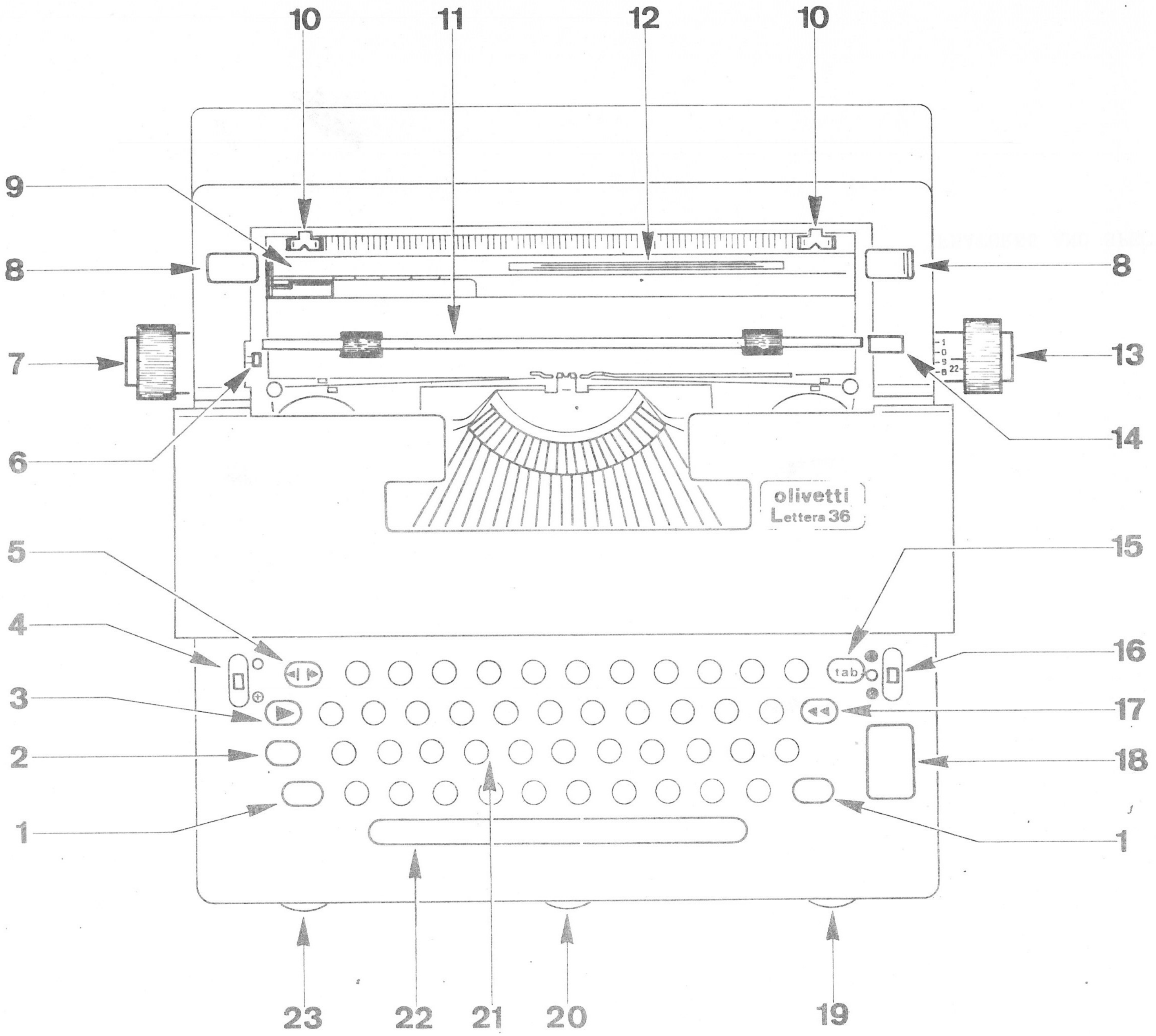
FEATURES AND SPECIFICATIONS


olivetti
Lettera 36
tab

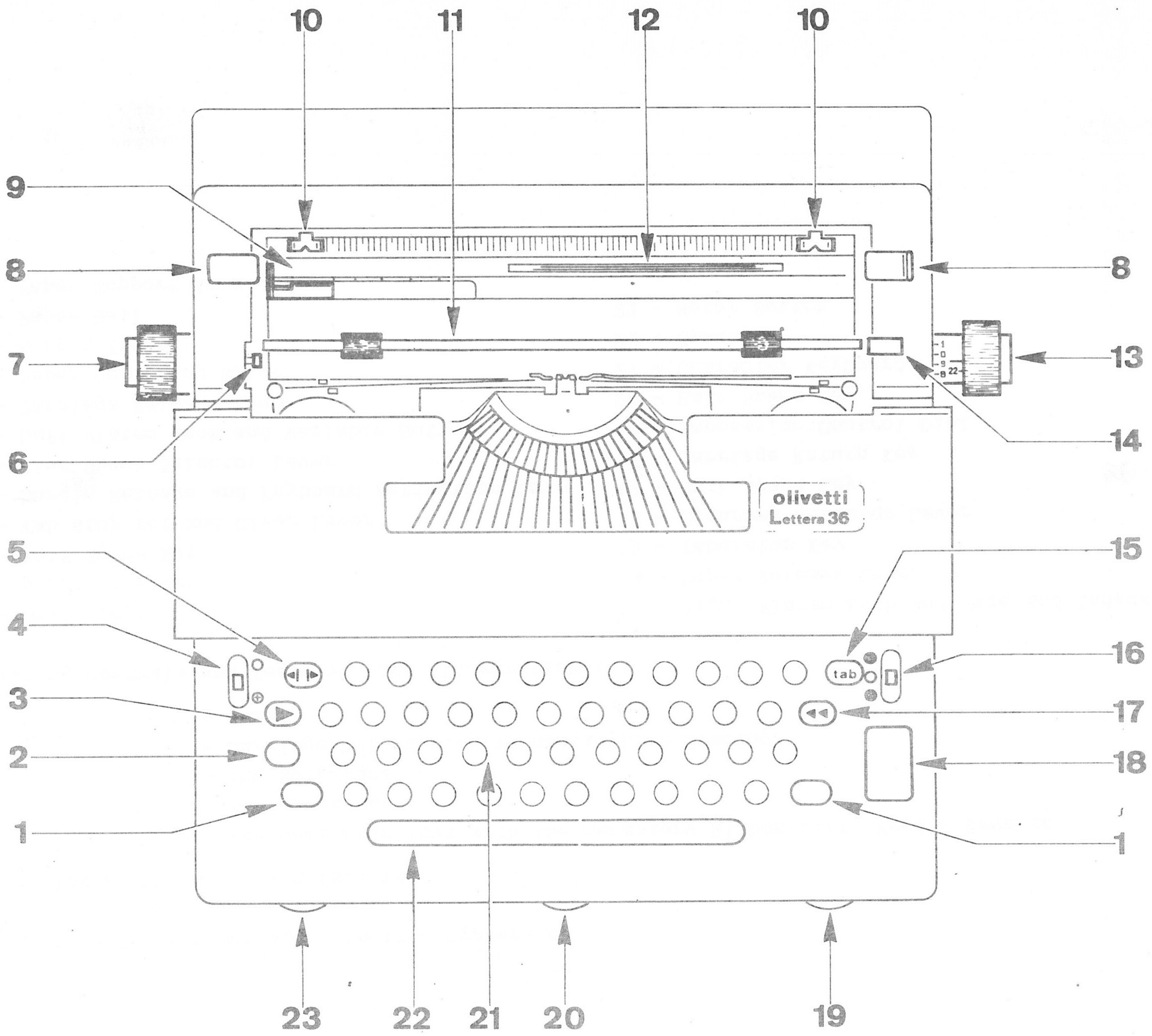
The Lettera 36 is a portable electric typewriter.

The following are motorized features:

- the Character Keys with the necessary Ribbon Lift, Feed & Reverse
- the Space Bar
- the Backspace
- Carriage Return with automatic Line Spacing
- Shift

Operating controls and features (see illustration):

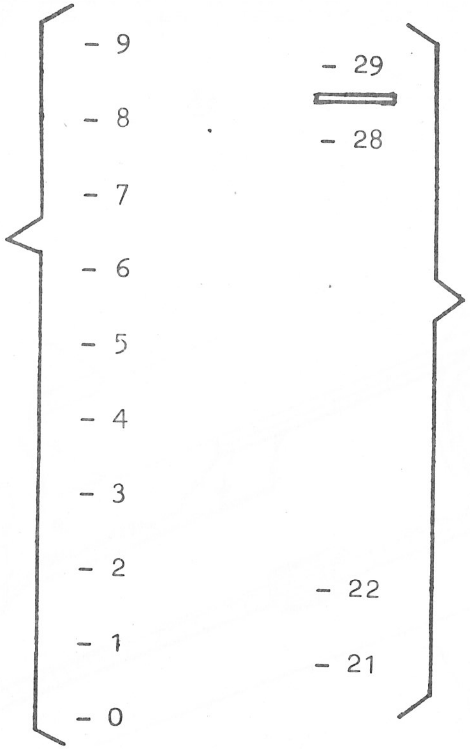
1 - Shift Keys
2 - Shift Lock Key
3 - Half Space Key
4 - Tab Stop Set and Clear Lever
5 - Margin Release and Keyboard Activation Key
6 - Line Space Selector Lever
7 - Left Platen Knob and Variable Button
8 - Carriage Release Lever
9 - Paper Centering Guide
10 - Margin Stops
11 - Paper Bail
12 - Paper Support Arms
13 - Right Platen Knob and Page End Indicator
14 - Paper Release Lever
15 - Tabulator Key
16 - Bichrome Selector Lever
17 - Back Space Key
18 - Carriage Return Key
19 - Impression Control Dial
20 - Half Space Key
21 - Character Keyboard
22 - Space Bar
23 - Motor Switch


olivetti
Lettera 36
tab

Page End Indicator

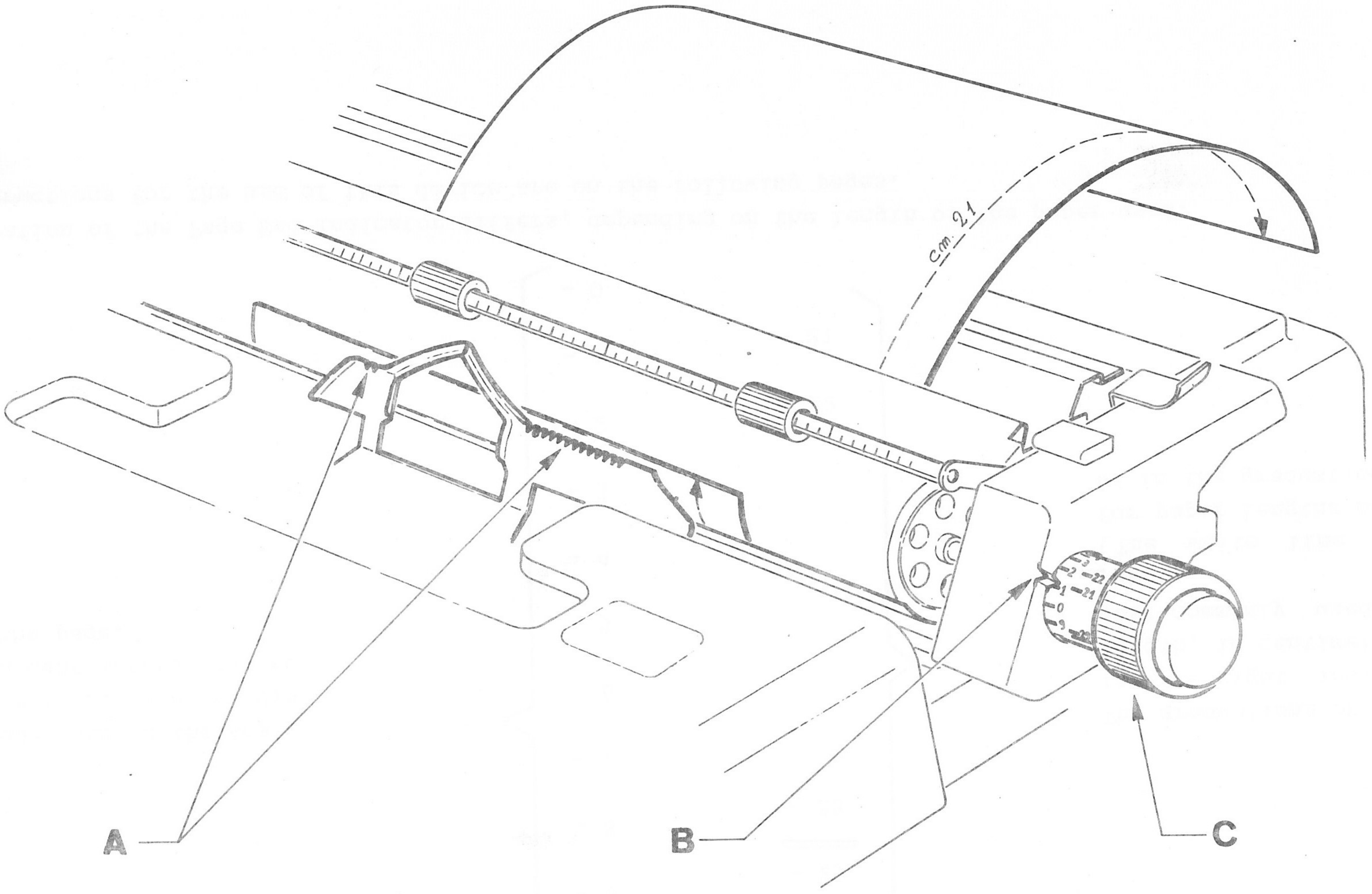
The Page End Indicator permits the operator to determine how far it is to the bottom end of the paper from the line she is typing.
On the Indicator Knob (13), there are two graduated scales:

The graduations on the scale to the left indicate the distance in centimeters to the end of the page.



The graduations on the scale to the right indicate the length, in centimeters, of the most commonly used sizes of paper.
(The white line is used for paper lengths not included in the graduations).

The operation of the Page End Indicator differs, depending on the length of the paper used.
The instructions for the use of this device are on the following pages.



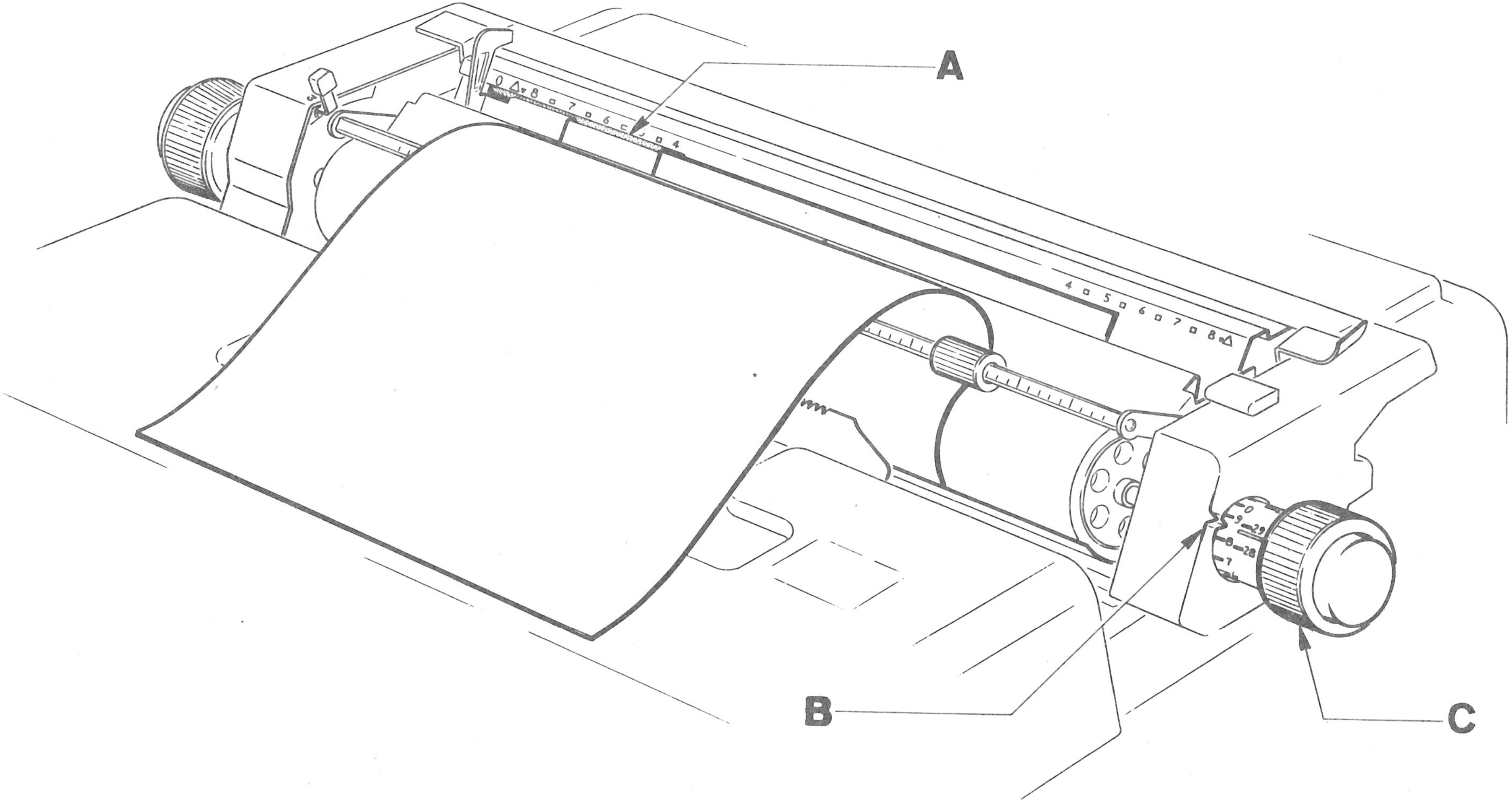
If the length of the paper corresponds with one of the values on the right hand scale:

a) Insert the paper into the typewriter and align the leading edge (top) with the edge (A).

b) Push Knob (C) to the left and rotate until Notch (B) coincides with the marking on the right hand scale that corresponds to the length of the paper. For example, if the paper is 21 centimeters long, Notch (B) must line up with the number 21 on the right hand scale.

c) Release the Knob (C); you are now ready to type.

d) As the end of the page is approached (due to Line Spacing) the numbers on the left hand scale of the Page End Indicator will advance, indicating the distance to the end of the paper.



If the length of the paper does not correspond to any value on the right hand scale:

a) Insert the paper into the machine, aligning the rear edge of the paper with the slot (A) in the Paper Table.

b) Operate as described in paragraph b) on page 6 so that Notch(B) corresponds with the white line of the Knob (C).

c) Proceed as described in paragraphs c) and d) of page 6.

KEY FOR INTERPRETATION OF OPERATION AND ADJUSTMENT ILLUSTRATIONS

The system used in this publication to describe the operation of a mechanical sequence, assumes that the operational principles are known.

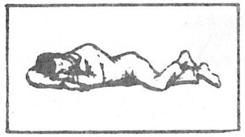
This means that the mechanical specifications and operational conditions are explained almost exclusively in a graphical manner.

The development of each subject is generally carried out in three distinct phases:

- FOREWORD	describes the purpose and mechanical operation that the mechanism must perform.
- REST	illustrates the mechanical components of the mechanism and their relative rest conditions.
- MOTION	illustrates the motions of the mechanism and its consequent conditions after movement.

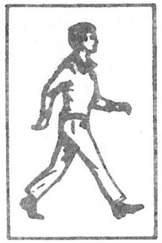
Some graphic symbols used in the illustration which do not have a description are explained further on.

EXPLANATION OF GRAPHIC SYMBOLS



MECHANISM AT REST

Appears on illustrations that denote the composition and rest conditions of the mechanism.



MECHANISM IN MOTION

Appears on illustrations that denote the motions and work conditions of the mechanism.

○

COMMAND MECHANISM

Indicates sequentially the parts that make up the command mechanism.

□

EXECUTION MECHANISM

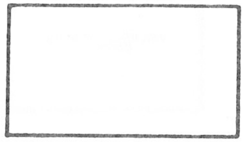
Indicates sequentially the parts that make up the execution mechanism.

⑤ $\boxed{7}$

$\underline{3}$

IMPORTANT DETAILS

Generally indicates the first part and the last part (or parts) of the mechanism.
(The underscore is used for simple mechanisms which cannot be subdivided into command and execution mechanisms).



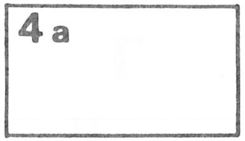
CONDITION OF MACHINE

The rectangle encloses the operational conditions (at rest, at work).

4_{abc}

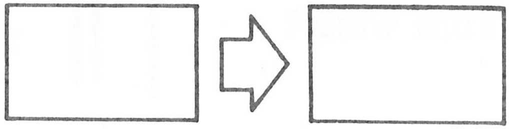
NUMBERS WITH SUBSCRIPTS

Indicates a motion (4) which creates several conditions (a, b, c) located at different points not near each other.



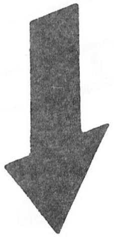
NUMBERED RECTANGLE

Encloses a condition created by a motion numbered with subscript.



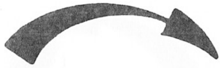
CONDITION CHANGE

This arrow interconnets the rectangles that illustrate the start condition and the condition after movement.



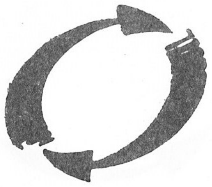
ACTING FORCE

This arrow indicates the point and direction of the applied force. (Generally it indicates the force of the operator or of a spring).



DIRECTION OF MOVEMENT

This arrow indicates the direction of movement of the part designated.



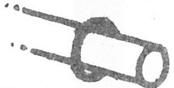
CONTINUOUS ROTATION

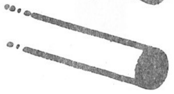
Indicates that the part on which it is drawn (usually a shaft, cams, or other rotating mechanism) is in continuous rotation.

▼

CONTACT

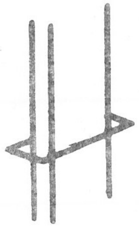
Indicates a contact point between two parts of the mechanism.





ROTATING SHAFT

Indicates a shaft that acts as a rotating shaft. Indicates a shaft that acts as a pivot shaft.



LATERAL GUIDE

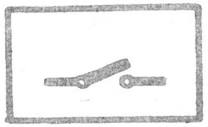
Generally indicates a guiding slot.

L

CLEARANCE
Indicates that a clearance is present.

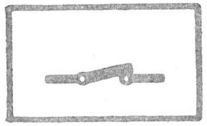
P

HOLD
Indicates that a hold is present.



OPEN CIRCUIT

Indicates that the electric component (electromagnet, solenoid, motor) to which it is referred is not receiving current.



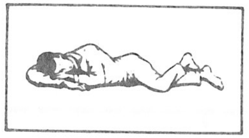
CLOSED CIRCUIT

Indicates that the electric component to which is referred is receiving current.

REMARKS ON THE FIGURES RELATED TO:

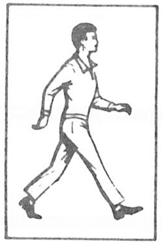
Foreword

Only the parts mentioned in the text are numbered.
In the frames are illustrated the conditions of the mechanical functions realized.



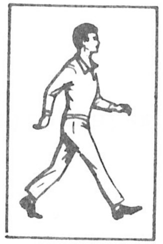
CONDITION OF REST

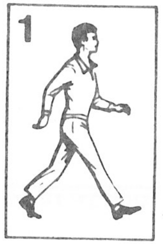
The parts that make up the mechanism are progressively numbered.
The frames illustrate the conditions of rest.

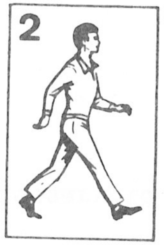


CONDITION OF WORK

The arrows that indicate the movement of the parts, making up the mechanism, are progressively numbered.
If the parts of the mechanism perform their function, within the prescribed time, in different directions, the movements are illustrated on two or more consecutive figures. The progressive numbering of the movement begins on the first figure and ends on the last one.

The symbol  that characterizes consecutive figures of movement is progressively numbered. For example:





On every figure the prospective drawing illustrates the starting condition. The detail frames illustrate the final condition and are connected to the movement that caused them.

GUIDE TO INTERPRET THE ADJUSTMENT FIGURES

PRELIMINARY OPERATIONS

This frame illustrates an operation necessary to bring the machine in the proper condition to make the adjustment.

INSPECTION

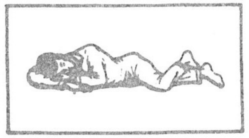
This frame illustrates a clearance (or hold, etc.) to be checked.

OPERATION (ADJUSTMENT)

This frame illustrates the operation necessary to obtain the required clearance.

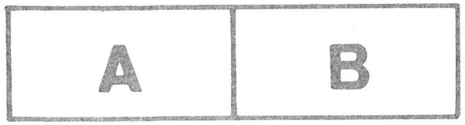
INSPECTION IN MOVEMENT

The condition to be checked shown in half of the frame is checked while the operation shown in the adjacent area is performed.



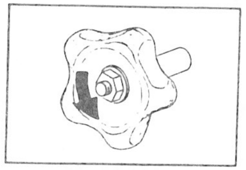
MACHINE TO REST

This frame indicates that the machine must be placed in a rest condition manually or electrically.



CONDITION

The operation shown in frame A must be continued until the conditions shown in frame B are reached.



ROTATE THE HAND-KNOB

This frame indicates the manual rotation of the hand-knob mounted on a motor shaft. A hand-knob rotation by n full revolutions is indicated by: 360° x n.

Z-2

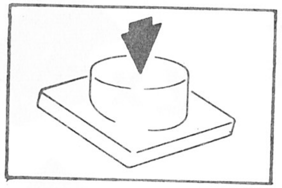
PROCEDURES

This frame indicates the page of "SECTION Z - PROCEDURES" where a description of a generally complex operation is explained.

% C-7

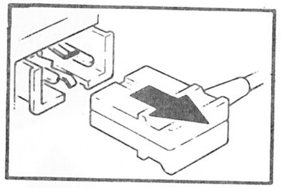
CONTINUE ON

This frame indicates the page where an adjustment is to be continued.



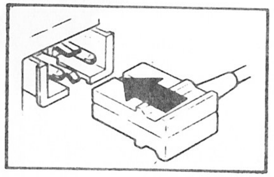
DEPRESS THE KEY

This frame indicates key depression. If the illustration of the key does not indicate a specific sign, the depression of any key is understood. Numerical entries and typewriting operations are indicated by numbers or words written under the key.



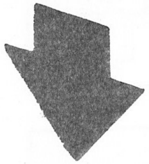
REMOVE THE LINE CORD

This frame indicates that the machine must be disconnected from the power source.



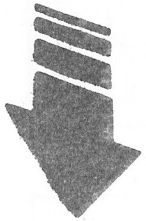
CONNECT THE LINE CORD

This frame indicates that the machine must be connected to the power source.



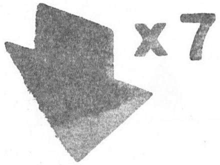
CONTROL

This arrow indicates at what point and in what direction a part is to be moved.



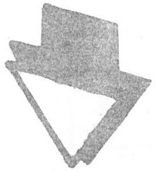
SLOWLY CONTROL

This arrow indicates that the part must be moved slowly.



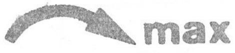
REPEAT CONTROL

The operation must be repeated as many times as the number shows.



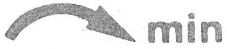
KEEP

The symbol shows that the part must be maintained in the position reached as a result of movement in the direction of the arrow.



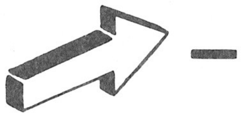
MAXIMUM MOVEMENT

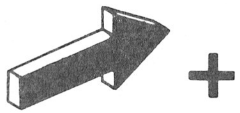
Indicates the maximum movement made by the part in the direction of the arrow.(Adjustments should be accomplished at the instant that the maximum condition is reached).



MINIMUM MOVEMENT

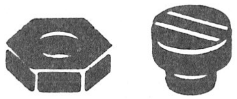
Indicates the minimum movement made by the part in the direction of the arrow. (Adjustments should be accomplished at the instant that the minimum condition is reached).





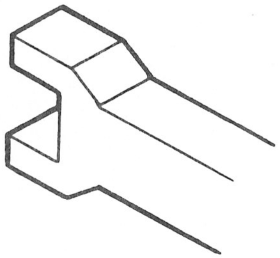
DIRECTION OF ADJUSTMENT

The arrows indicate the direction in which a part has to be moved in order to obtain the desired clearance. If the clearance checked is smaller than the desired one, use + direction. If the clearance checked is larger than the desired one, use - direction.
If the adjustment consists in the equality of two clearances (for example $L = L_1$) the clearance referred to by the direction of adjustment is always the first one (L).



ADJUSTMENT

The screw or nut shown "Negatively" must be loosened in order to perform the adjustment.



FORM

This illustration indicates the point on a part that must be formed. The adjustment can be performed with a Former or other suitable tool.

L

SMALL CLEARANCE

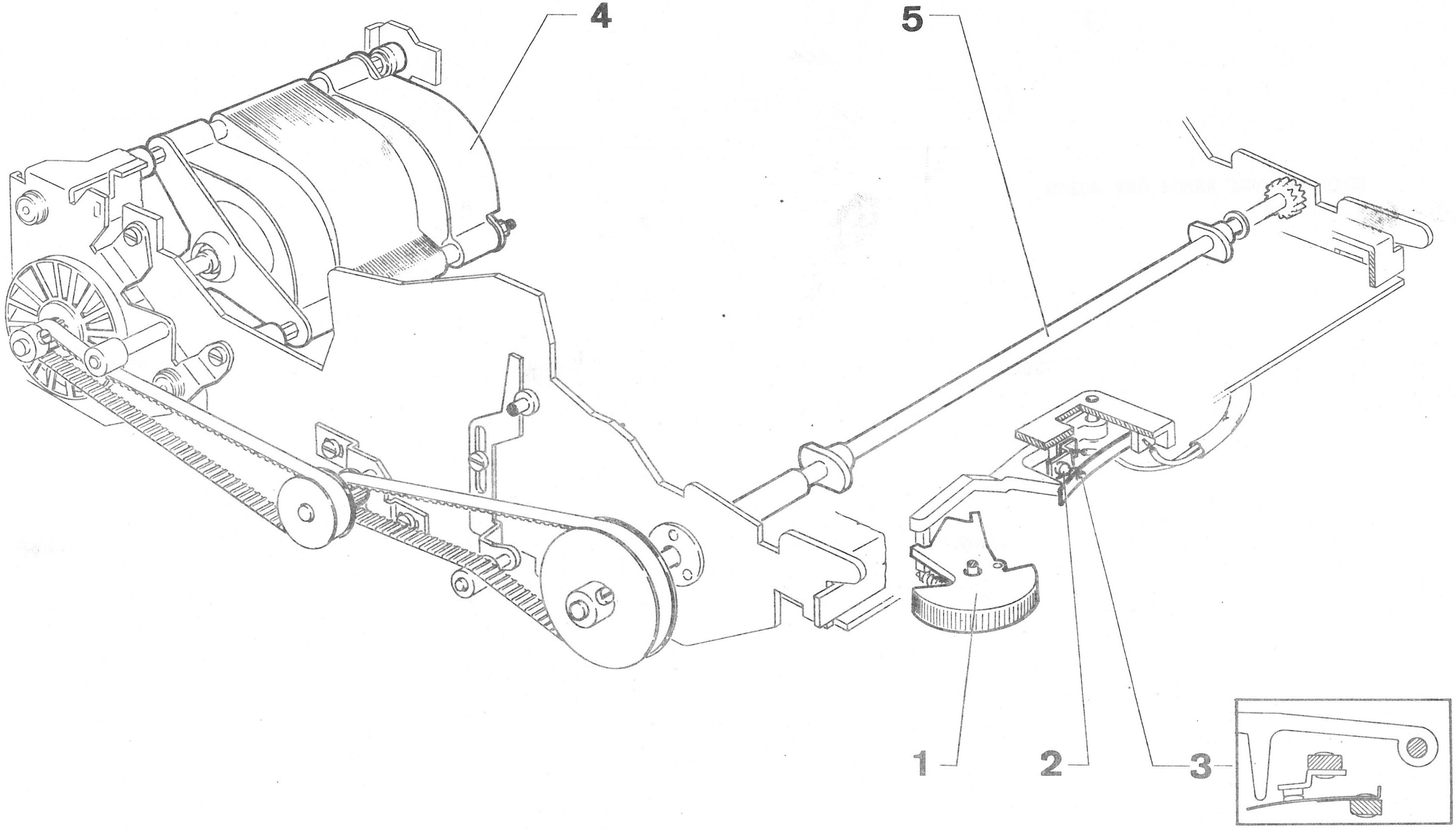
Check that the printed characters are not cut on top nor on the bottom

DESCRIBED OPERATION

This frame with a description of the operation to be performed is used whenever a graphic representation will not suffice.

OPERATION AND ADJUSTMENTS

Section A
MOTOR AND POWER TRANSMISSION



Foreword

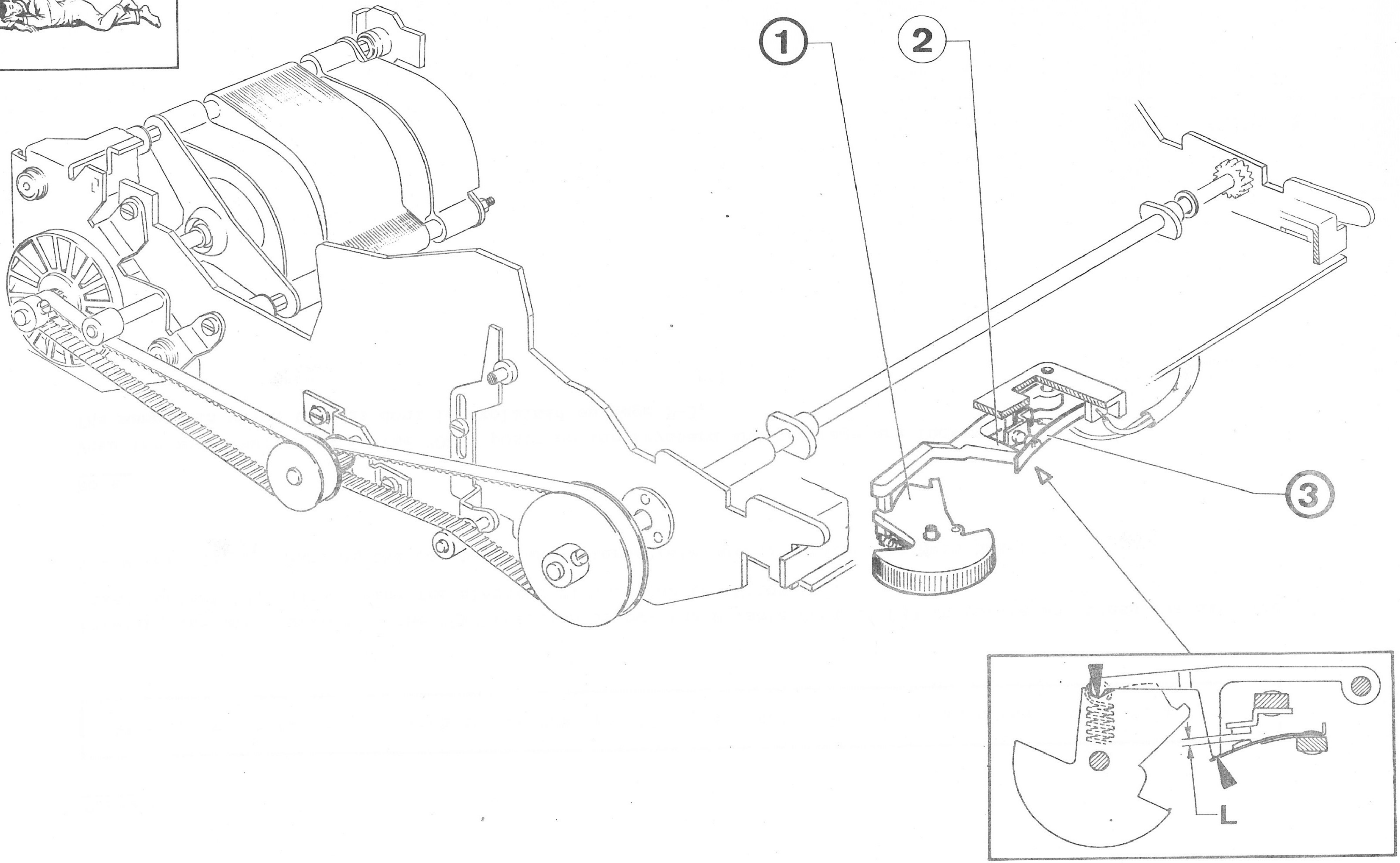
> When the motor switch is turned to the "ON" position the electric motor and main shaft start to rotate.

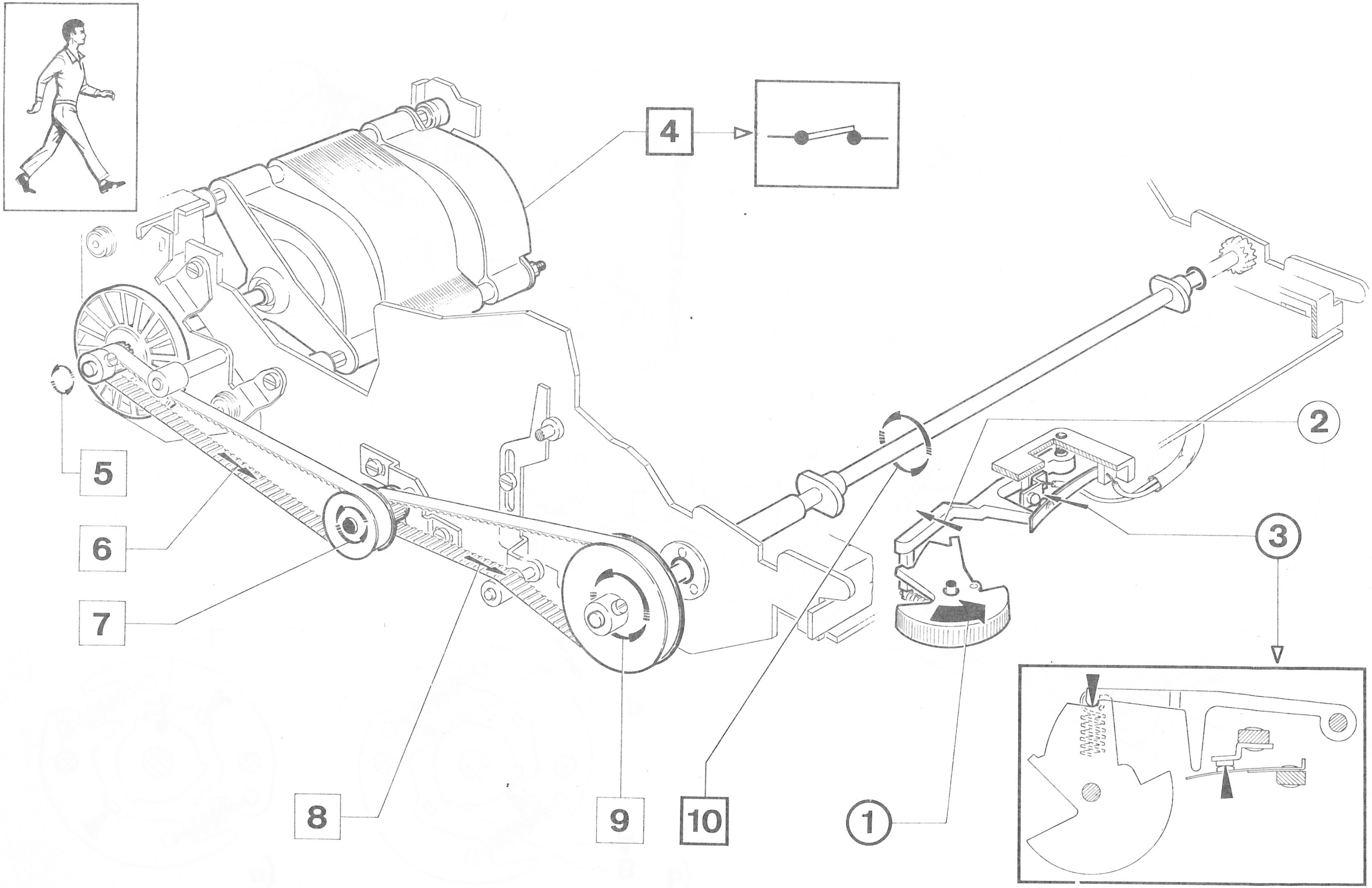
Rotating the motor switch to the "ON" position allows the Movable Contact (3) to rotate and press against the Fixed Contact (2) thus closing the electric circuit for the Motor (4).

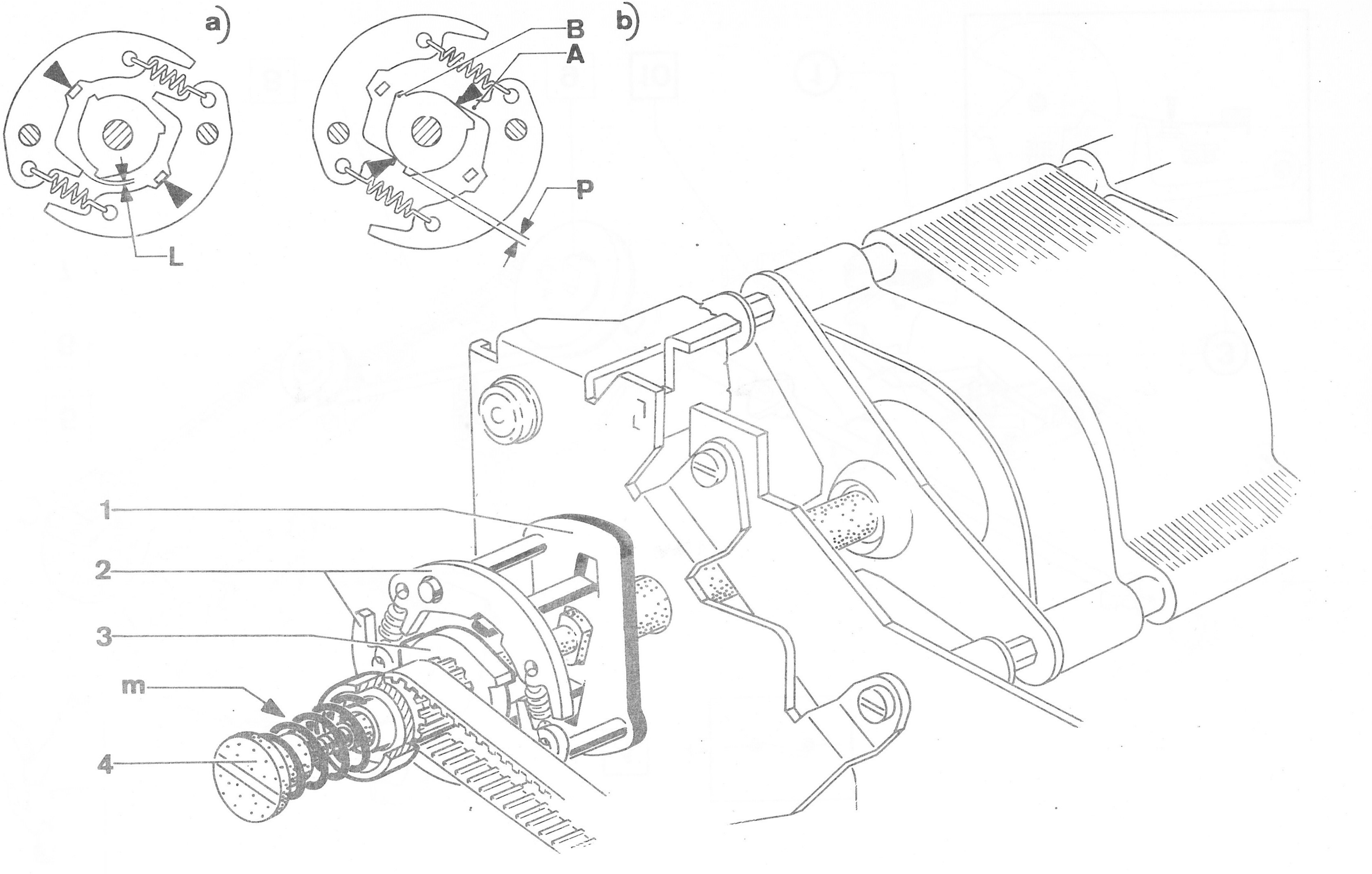
The Motor (4), by means of the cog belts and intermediate pulley rotates the Main Shaft (5).

Note

When the motor switch is in the "OFF" position the keyboard and carriage are locked.
The manner in which this is done is explained on page P-3.


L




a)
L
b)
B
A
P
1
2
3
m
4

Centrifugal Clutch

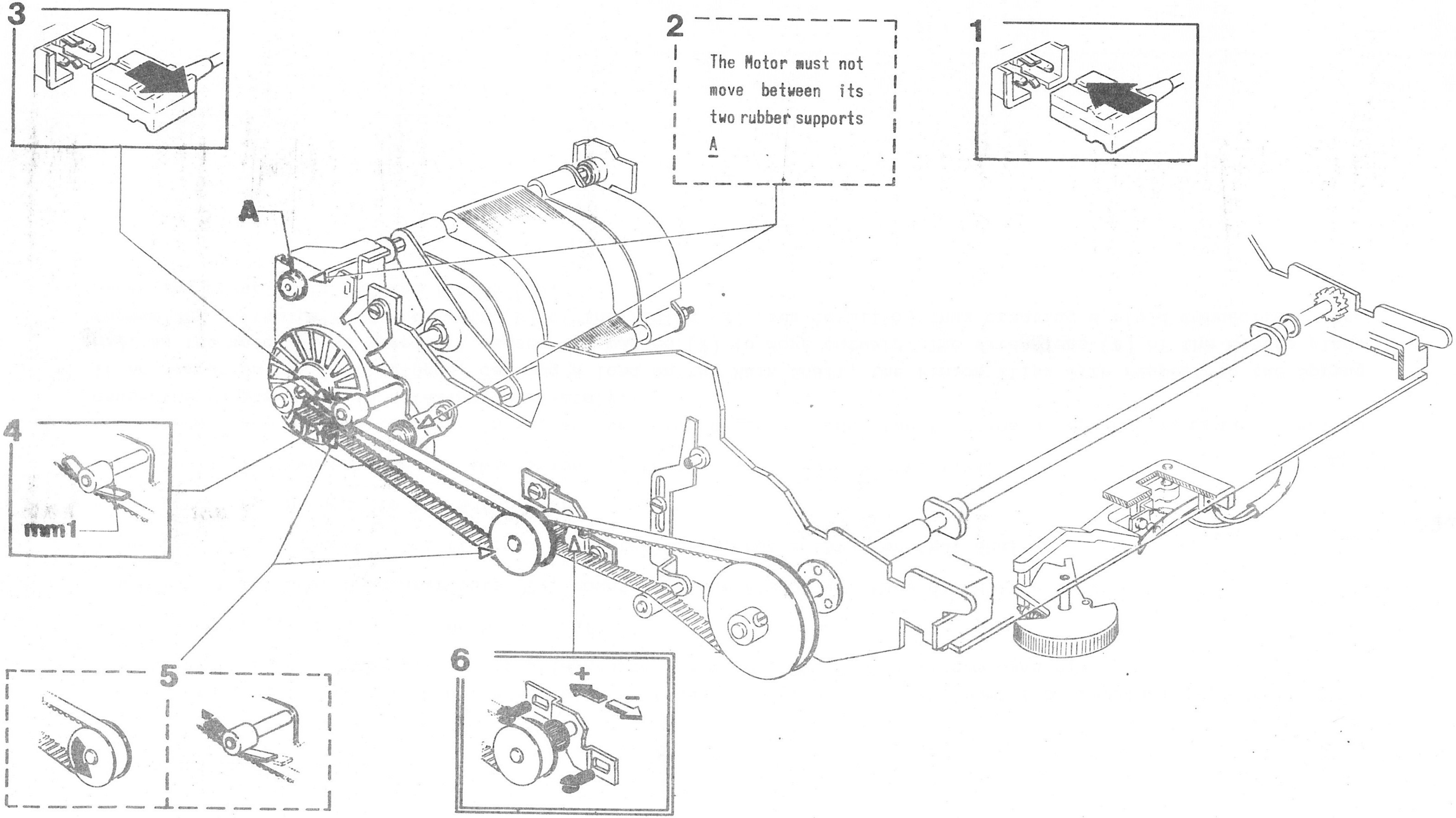
To avoid subjecting the motor to loading before it has reached a sufficient number of revolutions, a Centrifugal Clutch (illustrated in the figure) is attached to the motor. The Clutch is composed of:

- the Flange (1), integral to the Motor Shaft
- the two Centrifugal Counterweights (2), mounted on the Flange (1) (see definition a)
- the Pinion (3), which is not fixed to the Motor Shaft, but rotates on that Shaft
- the screw (4) integral to the Motor Shaft
- the Spring (m), which connects the Pinion (3) to the Motor Shaft by friction.

When there is no load on the Main Shaft, as the motor begins to run, the friction of Spring (m) is sufficient to cause the Pinion to begin rotating immediately.
If an operation has been tripped, causing a load on the Main Shaft, the Pinion slips with respect to the Spring (m). As the motor gains speed, it causes the masses (2) to move outward. The extensions (A) of the masses place themselves in the path of the teeth (B) of the Pinion (3) (see detail b) thus creating a rigid connection between the Motor Shaft and the Pinion (3).

① A-9 Checking the Tension of the Rear Cog Belt

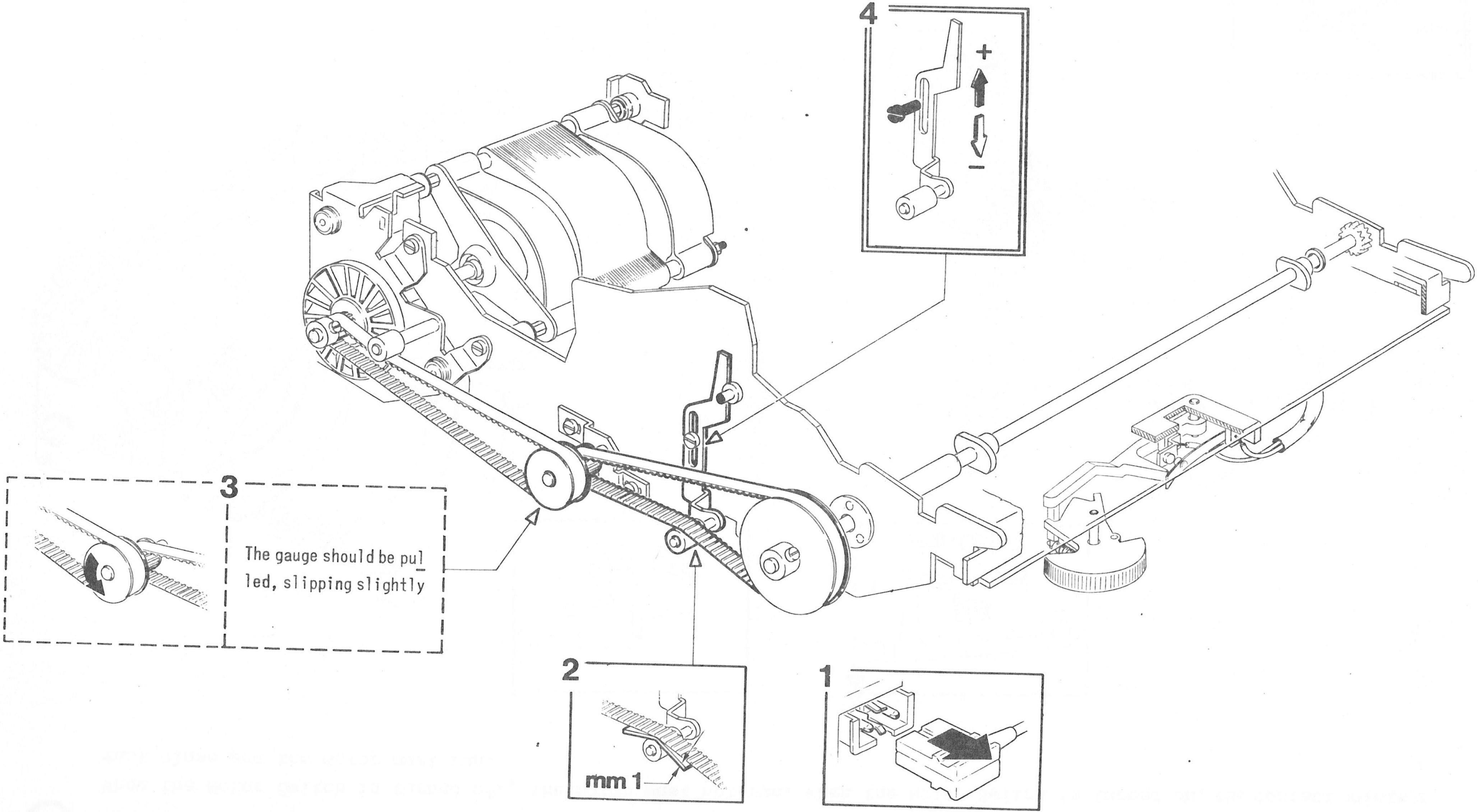
The Rear Cog Belt must be as tight as possible without changing the position of the Motor and without creating noise. This check requires a gauge 1mm thick.


3
2
The Motor must not move between its two rubber supports A
1
A
4
mm1
5
6
+
-

Note - Move in the + direction if motor does not move; in the - direction if the gauge is not moved.

② Checking the Tension of the Front Cog Belt

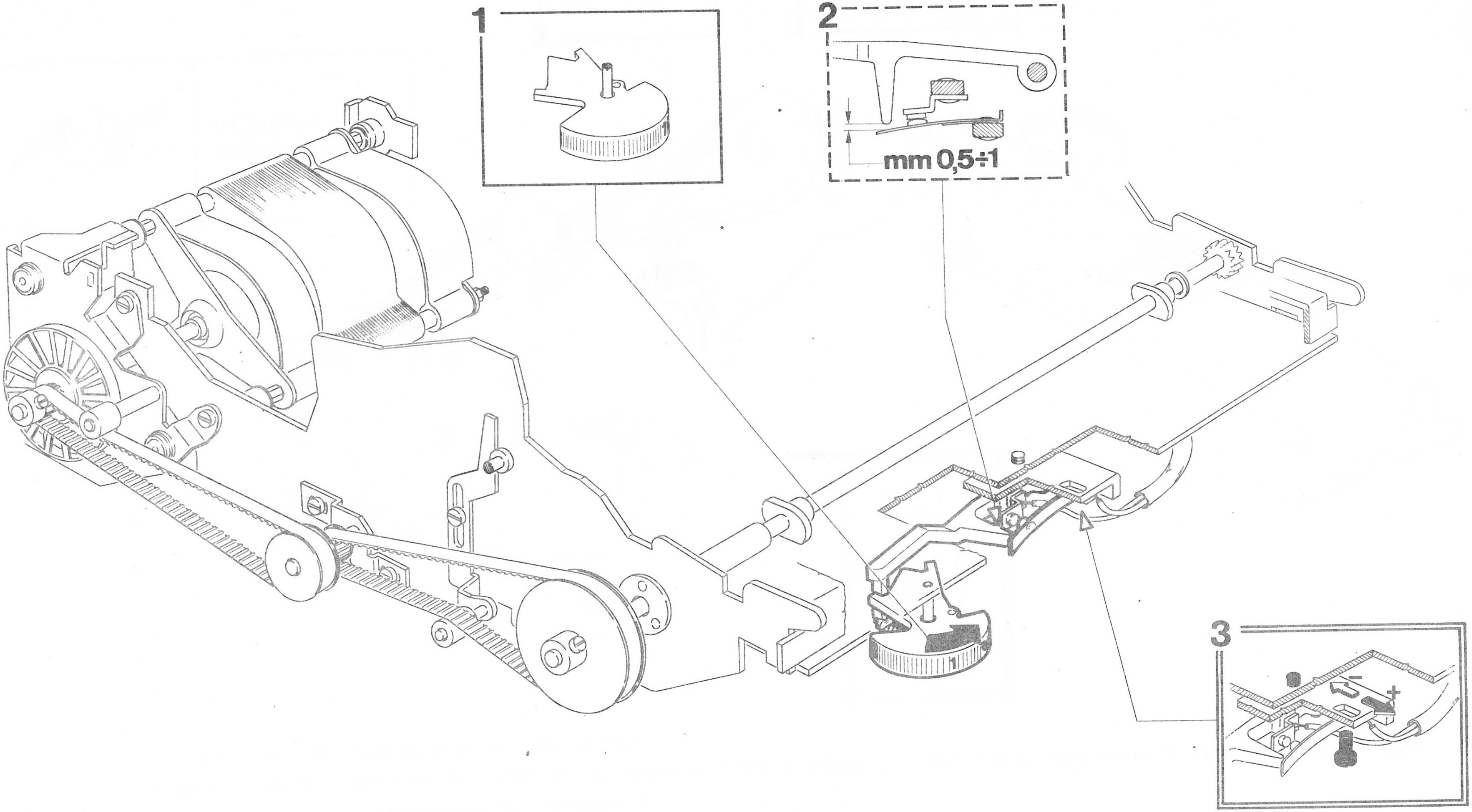
The Front Cog Belt must be as tight as possible without forcing the Main Shaft and without creating noise. This check requires the use of a gauge 1mm thick.


4
+
–
3
The gauge should be pulled, slipping slightly
2
mm 1
1

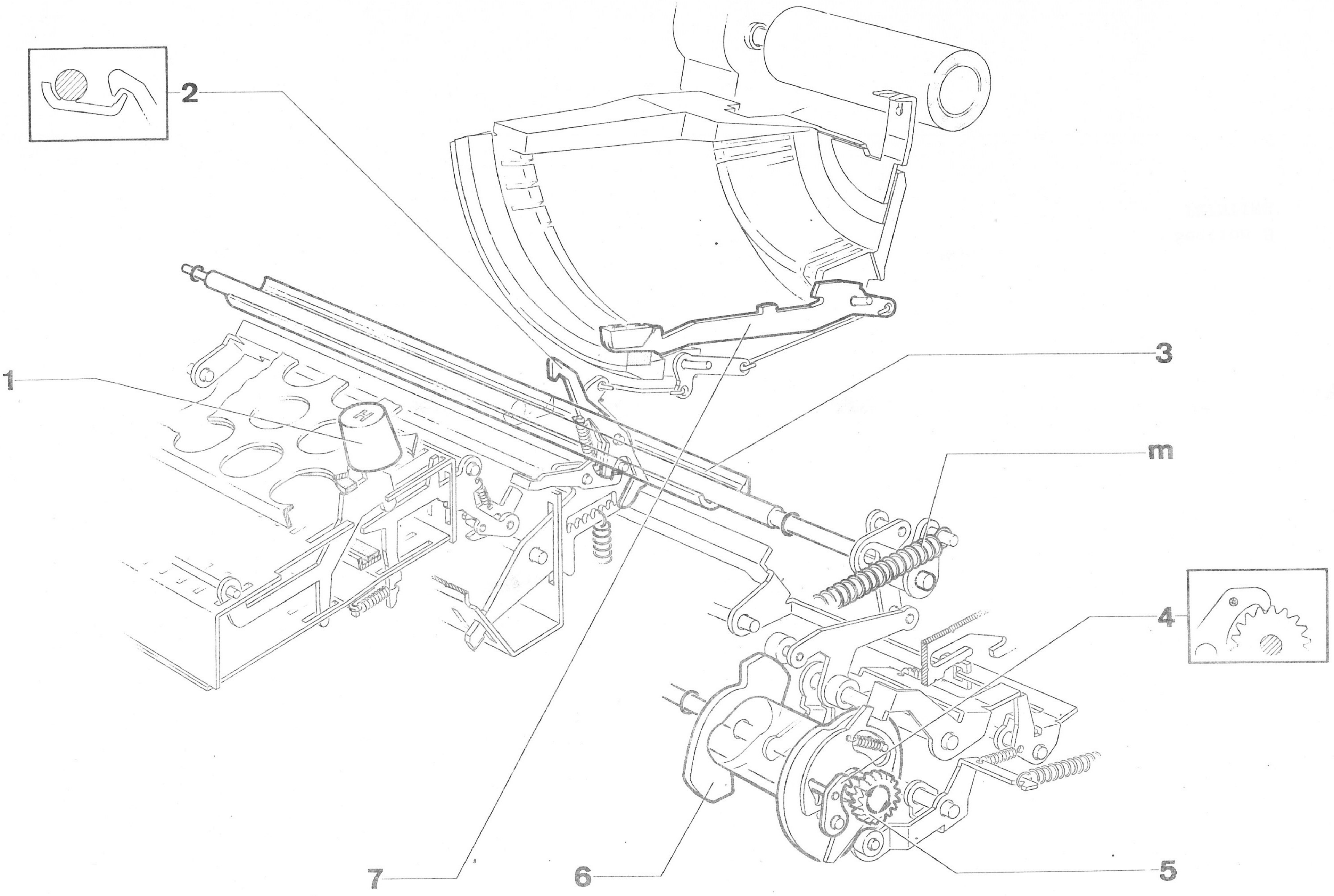
Note - Move in the + direction if the gauge is not pulled; and in the - direction if it does not slip.

③ Checking the Motor Switch Adjustment

When the Motor Switch is turned off, the motor must not run. When the Motor Switch is turned on, the contact points must close and the motor must run.



Section B
PRINTING


m

Foreword

When a Character Key is depressed the corresponding Type Bar is raised to the printing position.

Command mechanism

Depressing key (1):

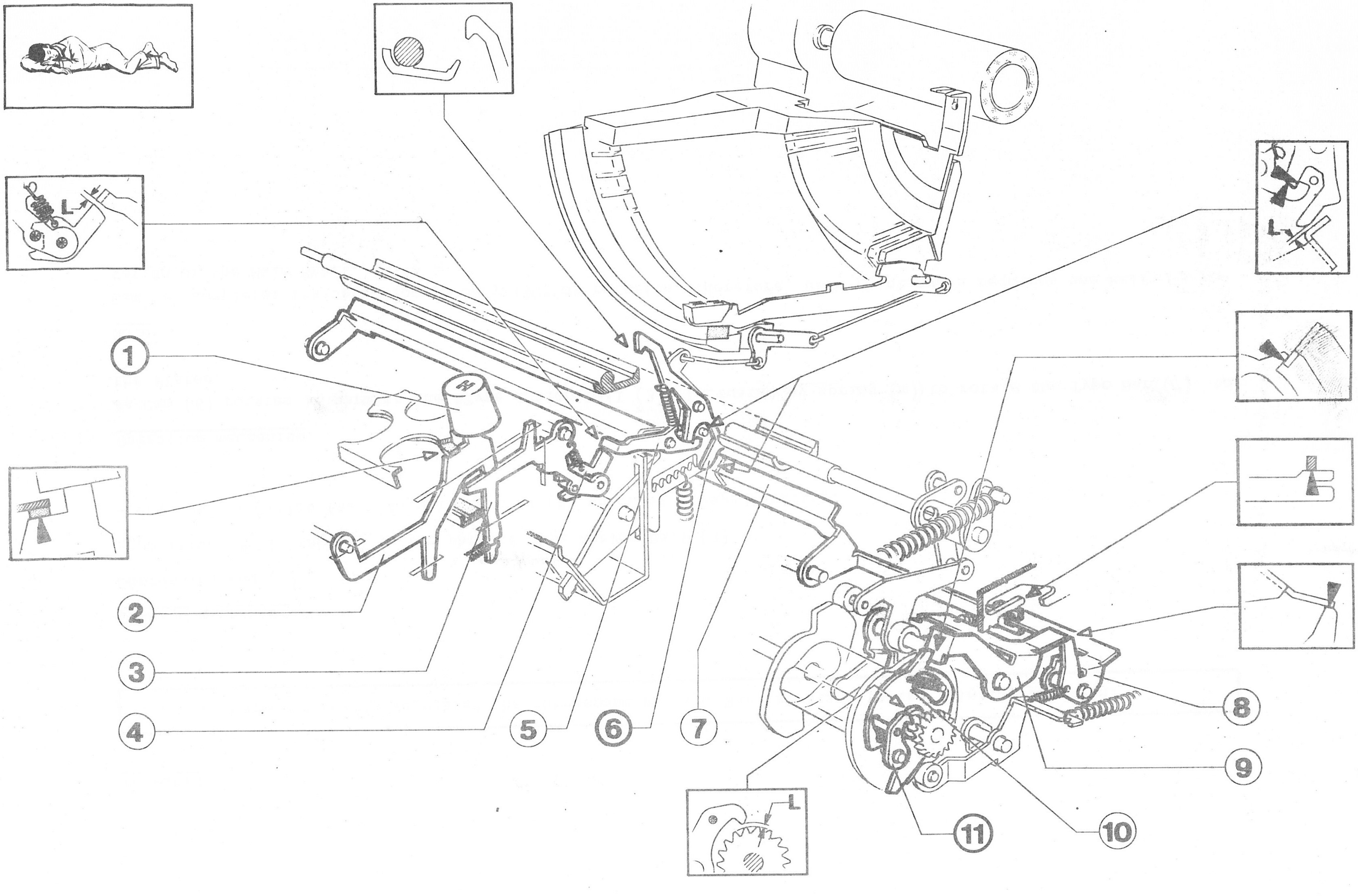
- positions Pull Link (2) in the path of Type Action Bail (3)
- engages Cam Clutch Pawl (4) with Ratchet (5) which is always rotating.

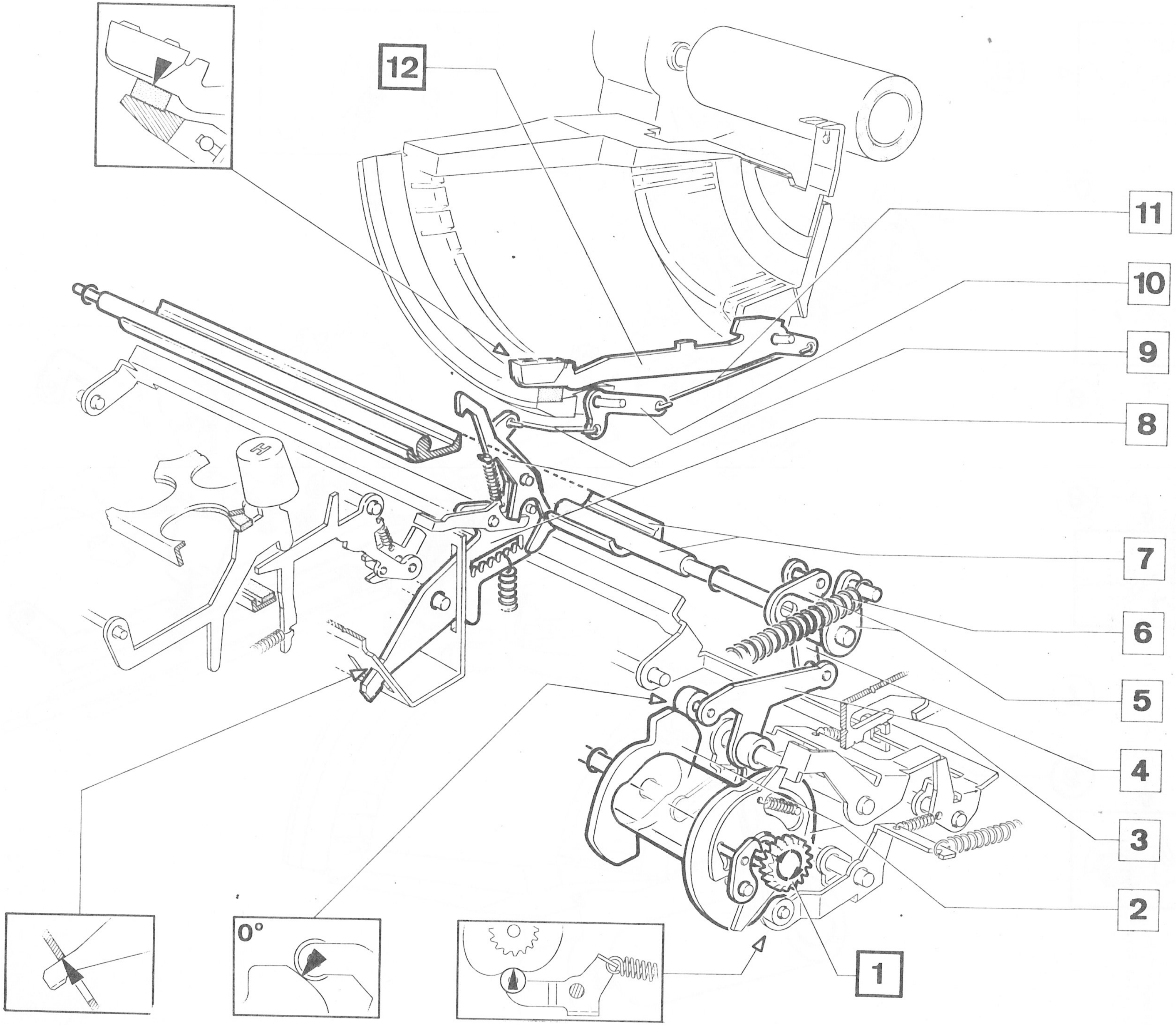
Operation mechanism

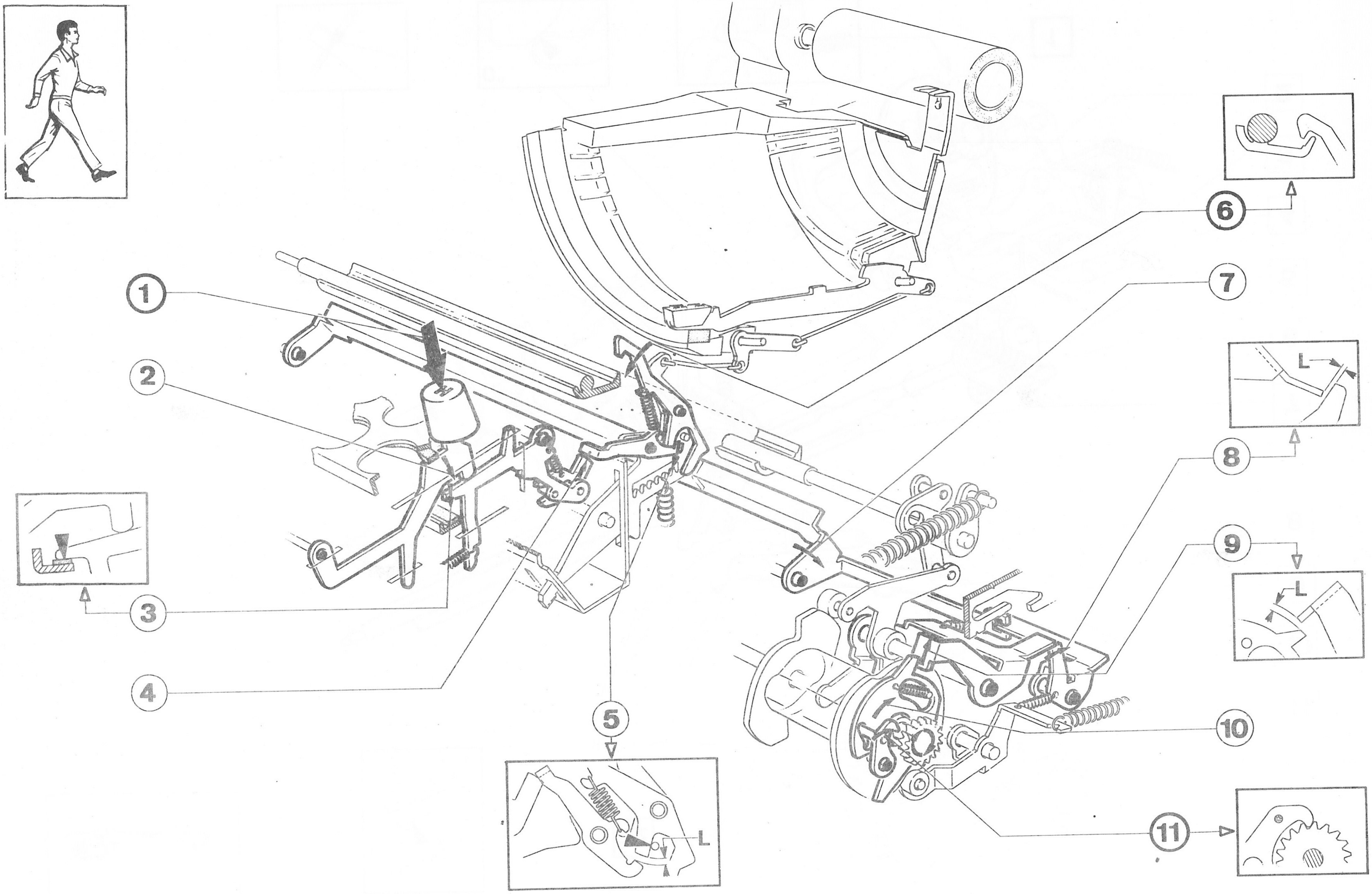
As Cam (6) rotates it permits the "Type Action Bail (3)" (actuated by spring (m)) to rotate the Type Bar (7) to the Platen.

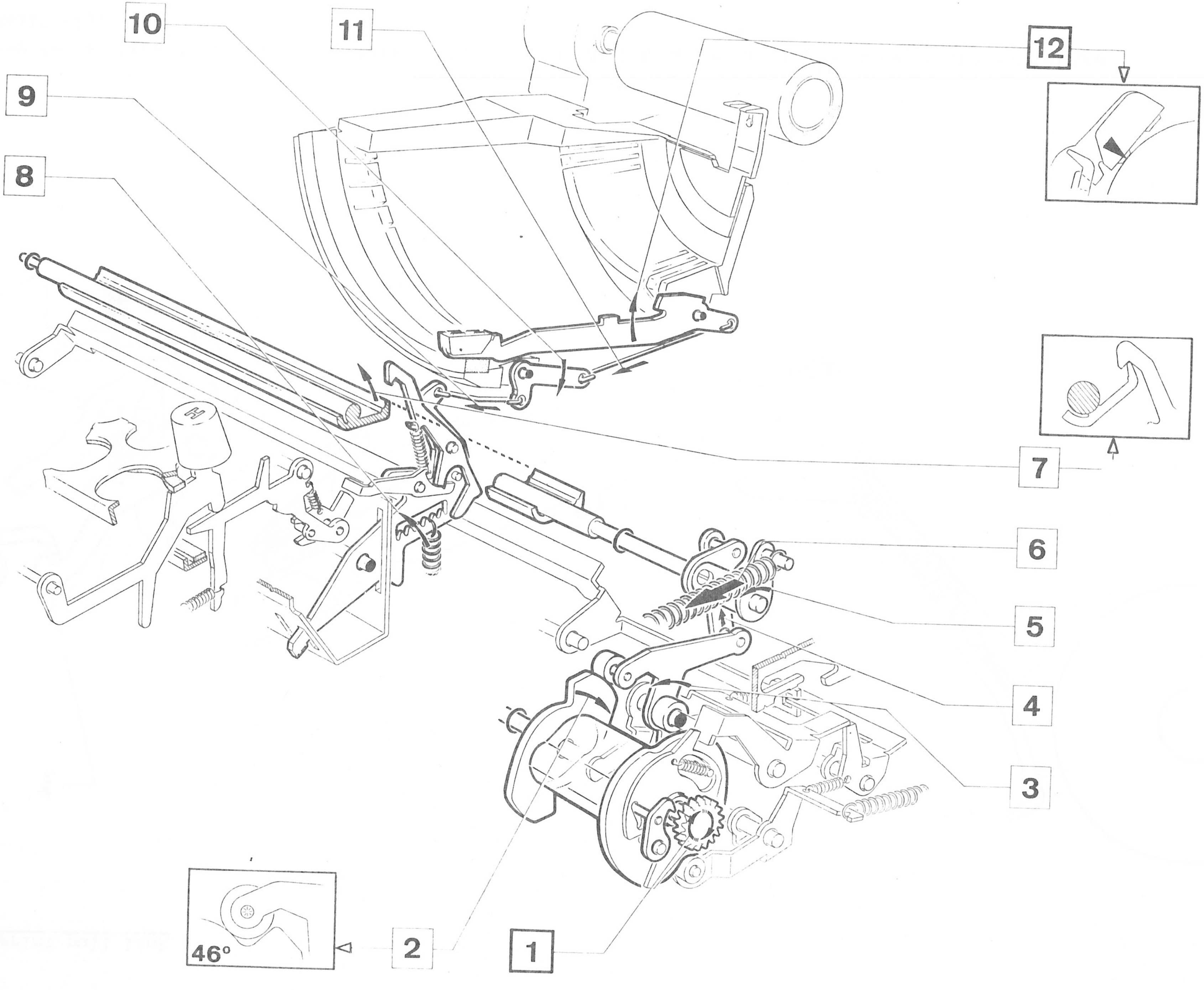
Note

Cam (6) completes its operation in only 180° of rotation. Therefore, each print cycle requires one half of a rotation of the Main Shaft.

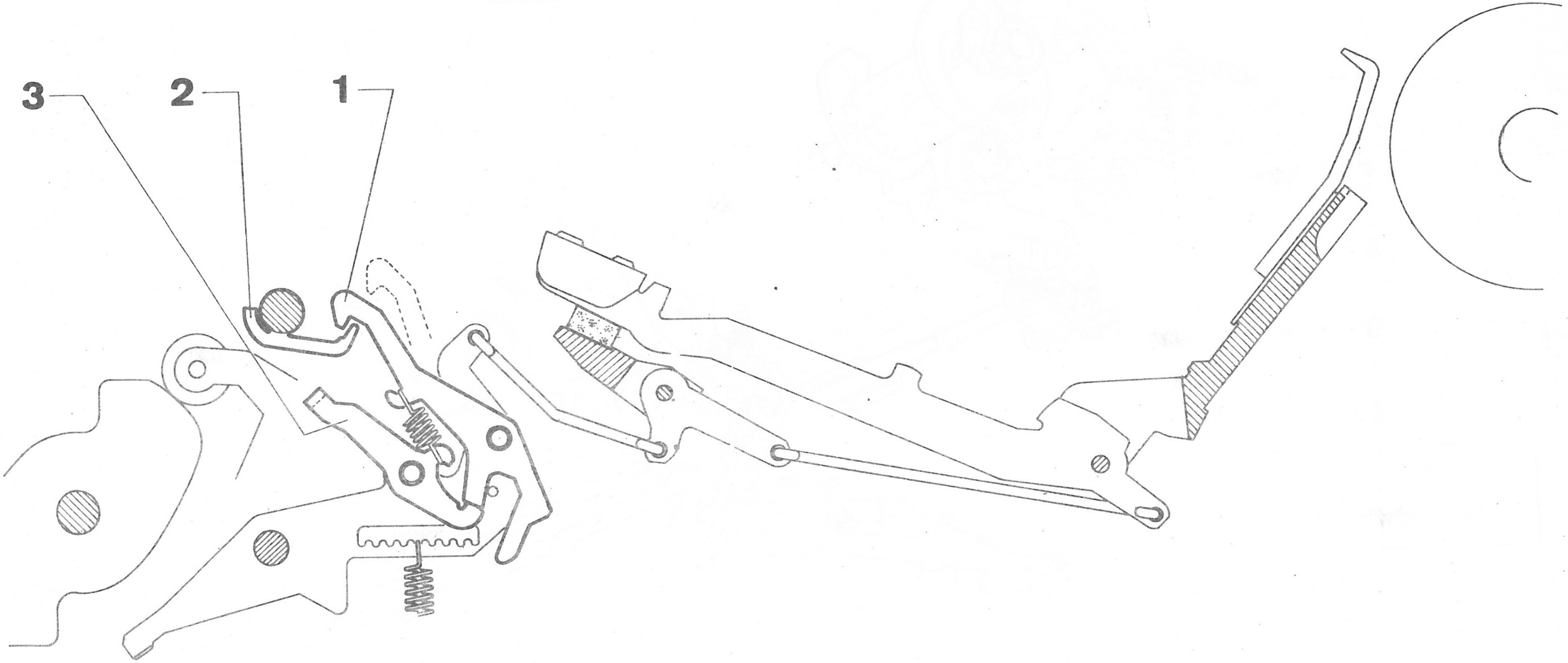

L
L
L


12
11
10
9
8
7
6
5
4
3
2
1
0°
H


L
L
L

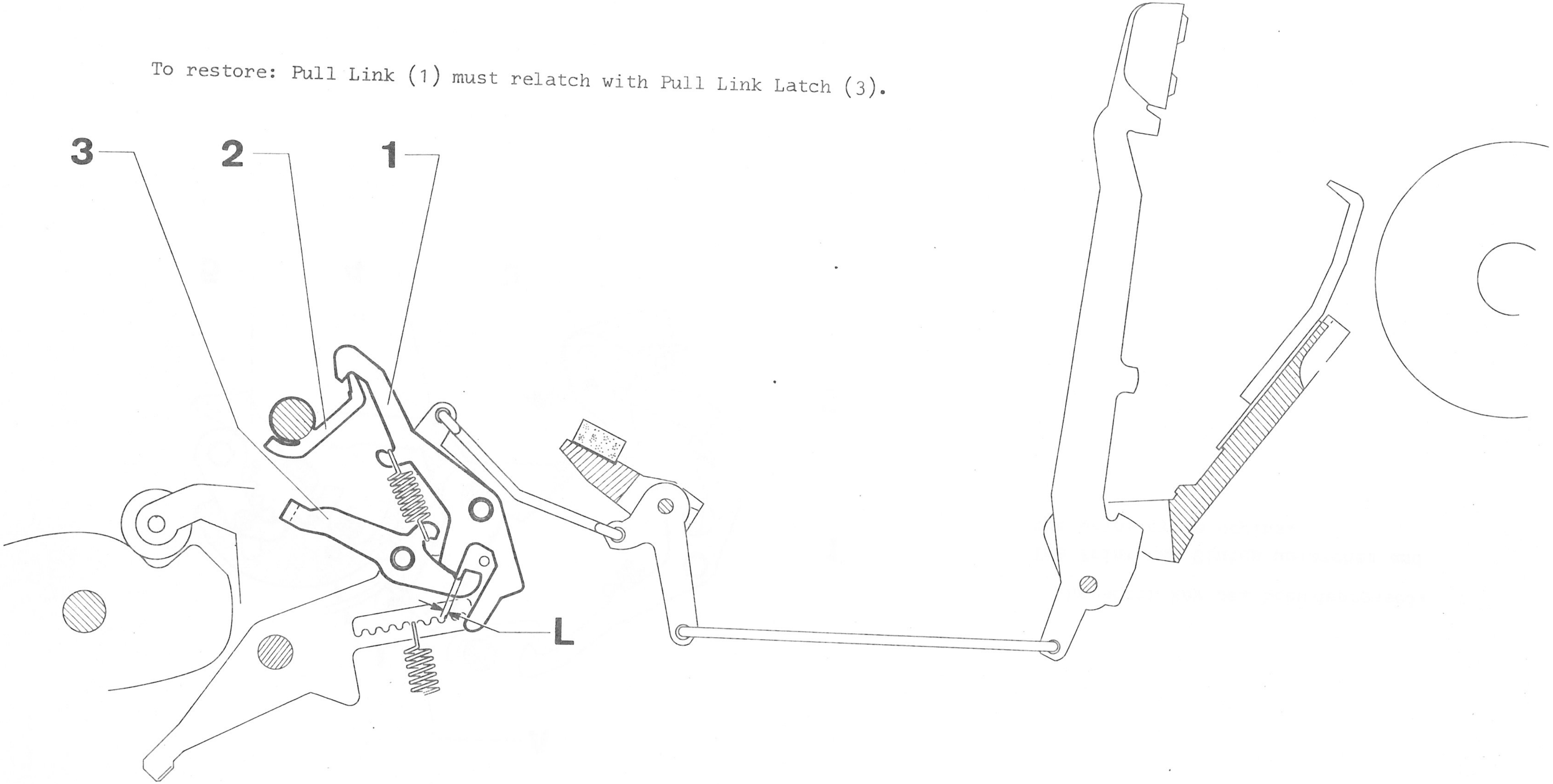

10
11
12
9
8
H
7
6
5
4
3
46°
2
1

Restoring the print pull link



When a Character Key as been depressed, Pull Link released by Pull Link Latch (3), rotates in the path of the "Type Action Bail" (2).

To restore: Pull Link (1) must relatch with Pull Link Latch (3).

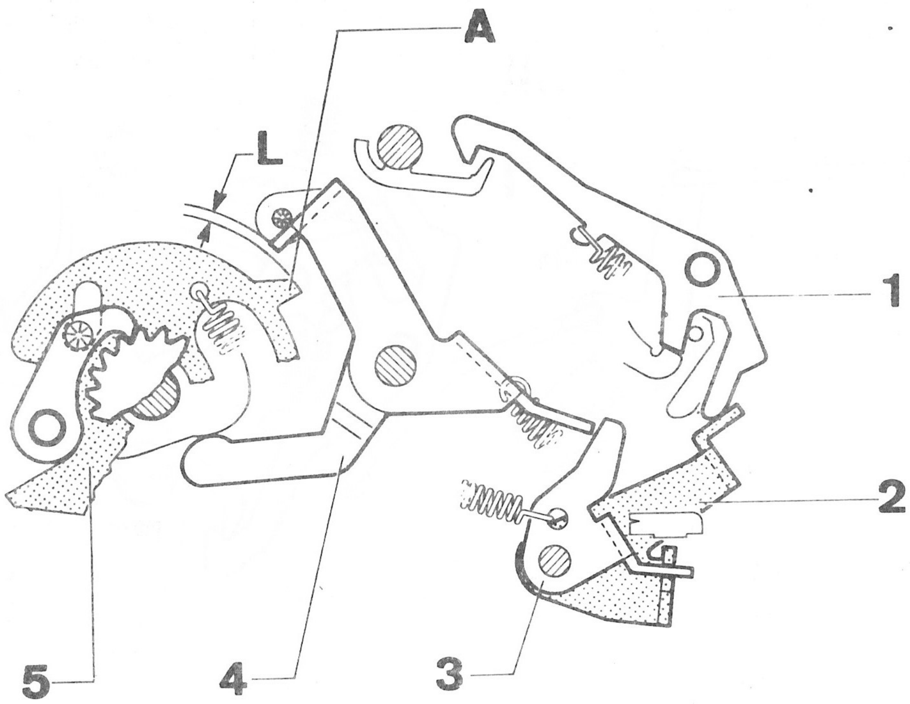


When "Type Action Bail" (2) has completed its maximum rotation; Pull Link 1 is relatched to Latch (3) with an extra clearance (L).

Note

Pull Link (1) is relatched to Latch (3) even if the character key is kept depressed.
This is described on page B-14.

Unlatching the Print Cam Clutch

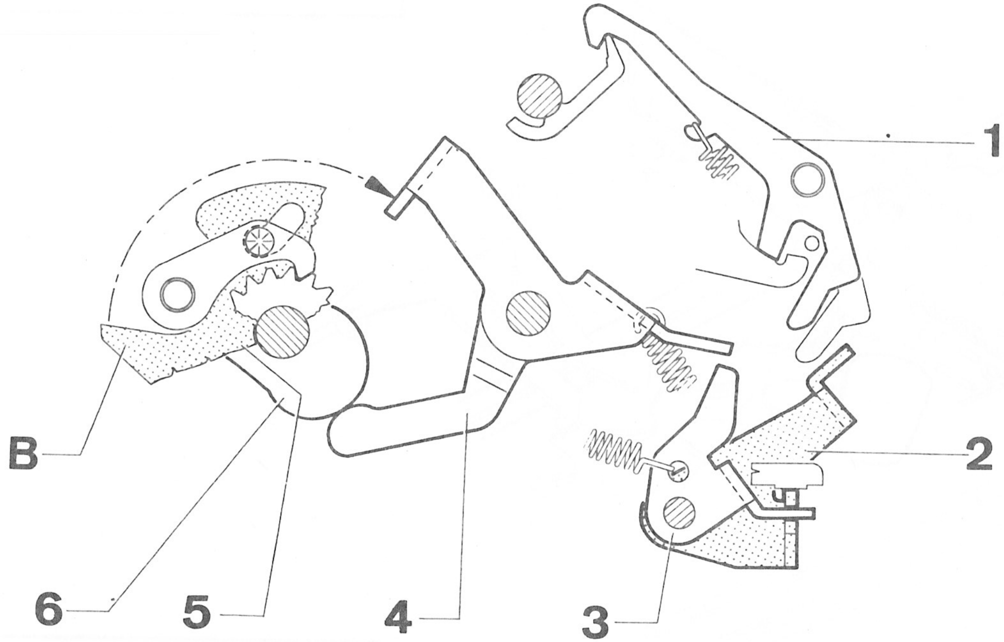


A character key has been depressed.

The Print Cam Clutch unlatches and the print cycle begins.

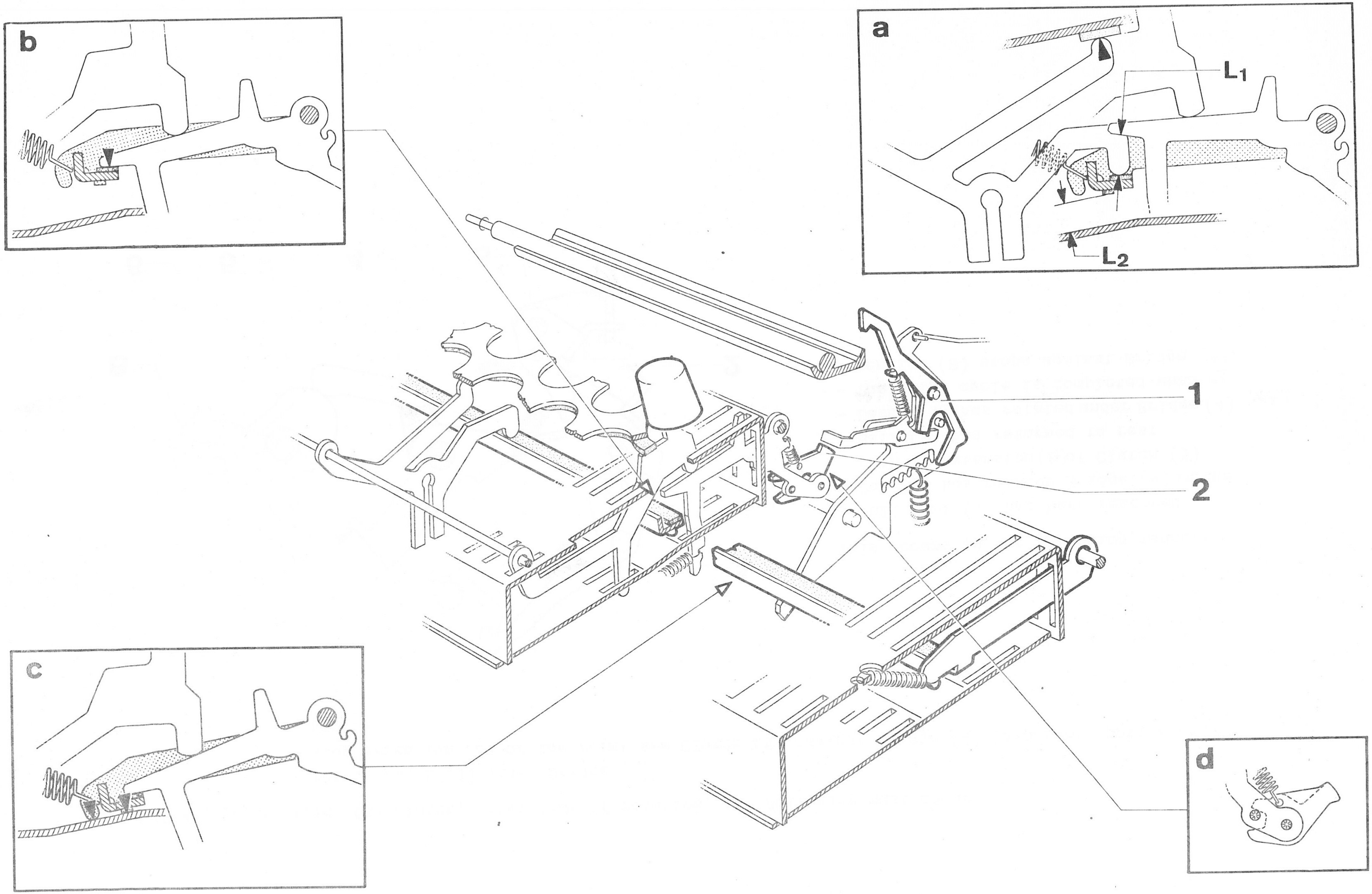
To disengage the Print Cam Clutch, after 180° of rotation, the following must occur:

- rotate Latch (3) under Bridge (4)
- stop extension (B) of the Print Arm Clutch (5) against Bridge (4) (diagram opposite of (A) - page B-10)



This occurs in the following manner:

- Pull Link (1) has been restored
- Cam (6) has rotated Bridge (4) in the path of extension (B) of Clutch (5)
- Bail (2) has returned to rest
- Latch (3) has rotated under Bridge (4)
- The print cycle is completed when extension (B) stops against Bridge (4).


a
L1
L2
b
1
2
c
d

Repeat Keys

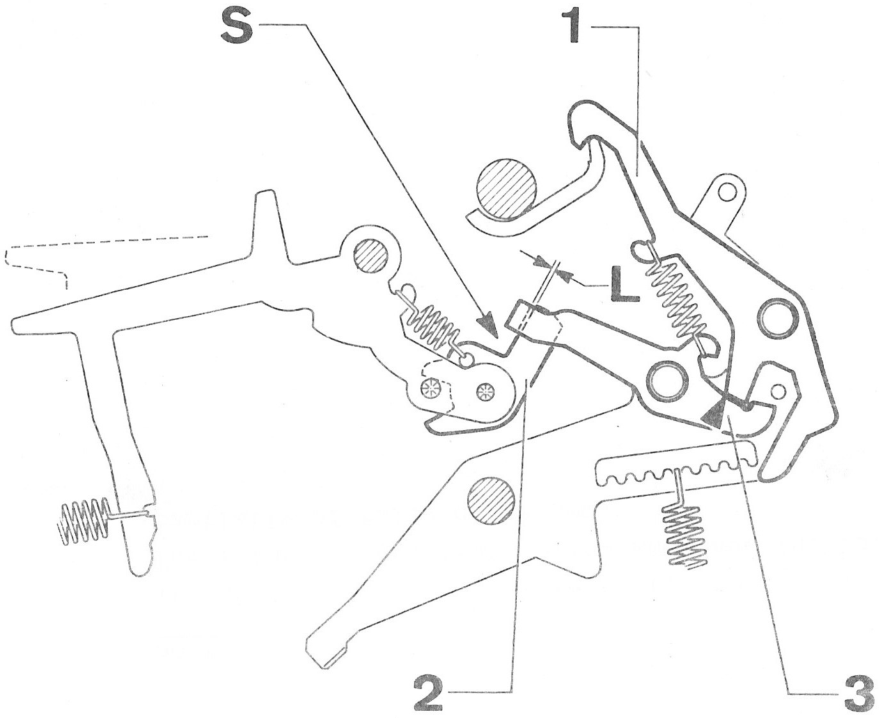
All Character Keys can, from their rest position (see detail a), be partially of fully depressed:

- partial = L1 (see detail b)
- full = L1+L2 (see detail c)

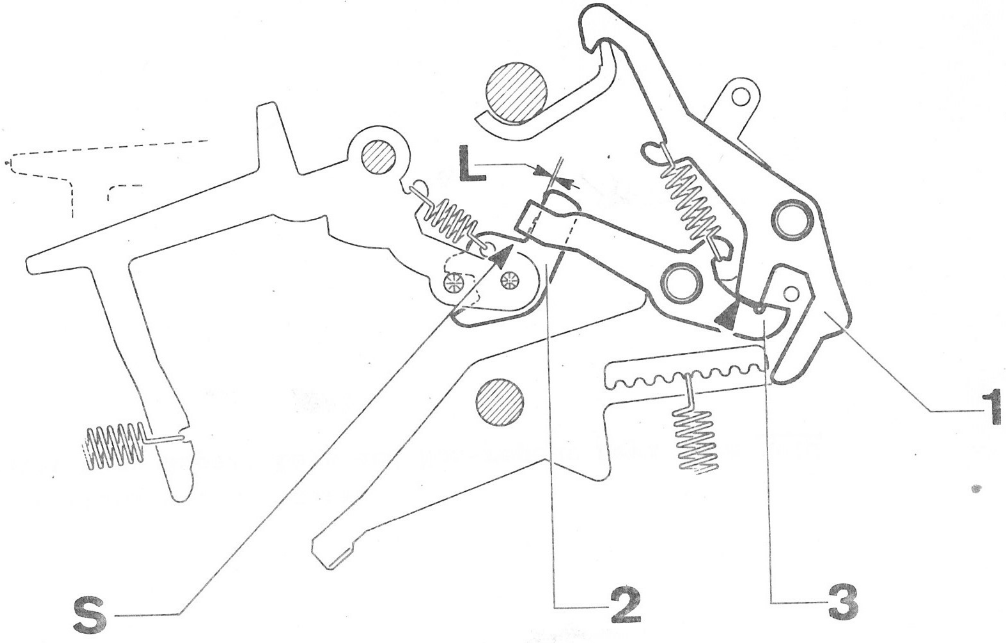
The Repeat Keys have a special Trip Pawl (2) shown in detail "d" (the broken line indicates the non-repeat Pawl). By fully depressing a Repeat Key, Pawl (2) prevents Pull Link (1) from being latched by the Pull Link Latch, therefore, the print cycle continues as long as the key is kept fully depressed.

Note

If any of the Non-repeat Keys are kept fully depressed, only one print cycle occurs.
The illustrations that follow show how the Pull Link (1) operates when Repeat Keys and Non-repeat Keys are held partially of fully depressed.

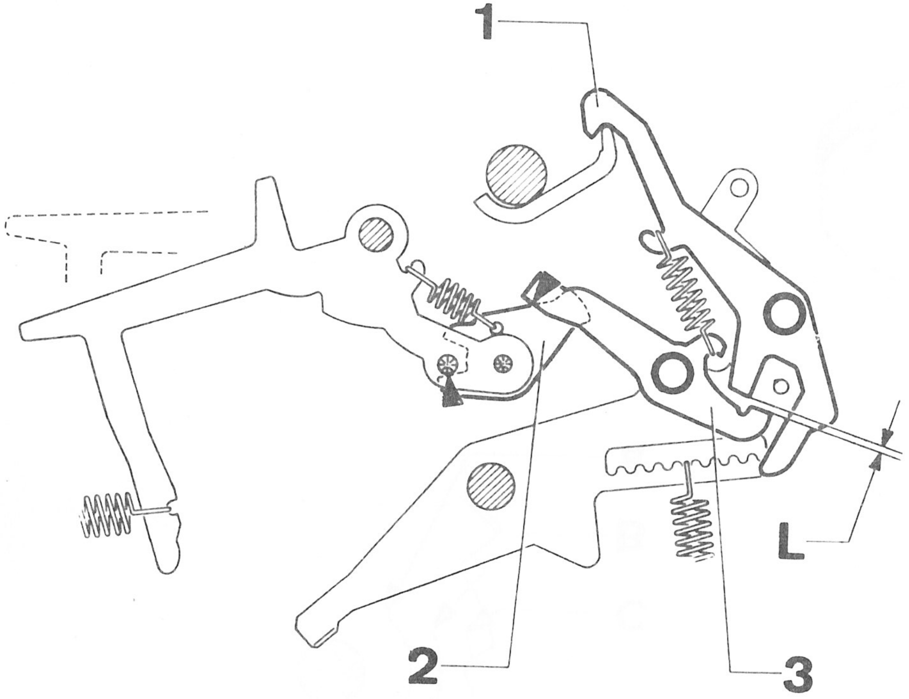


Partial depression of a non-repeat key



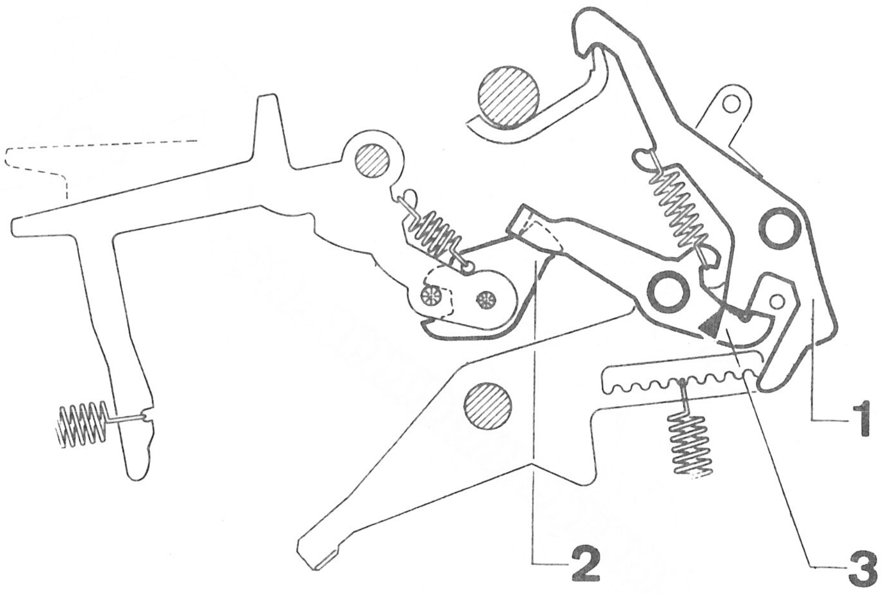
Full depression of a non-repeat key

In both cases Pull Link (1) was relatched due to cutout (S).
When the key lever returns to rest, Latch (3) disengages from Pawl (2) as it rotates.



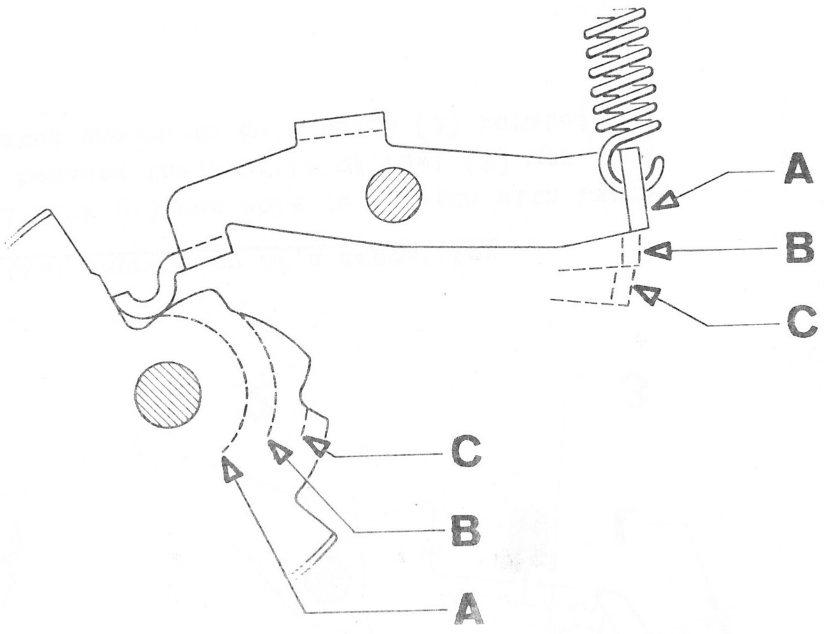
Partial depression of a Repeat Key

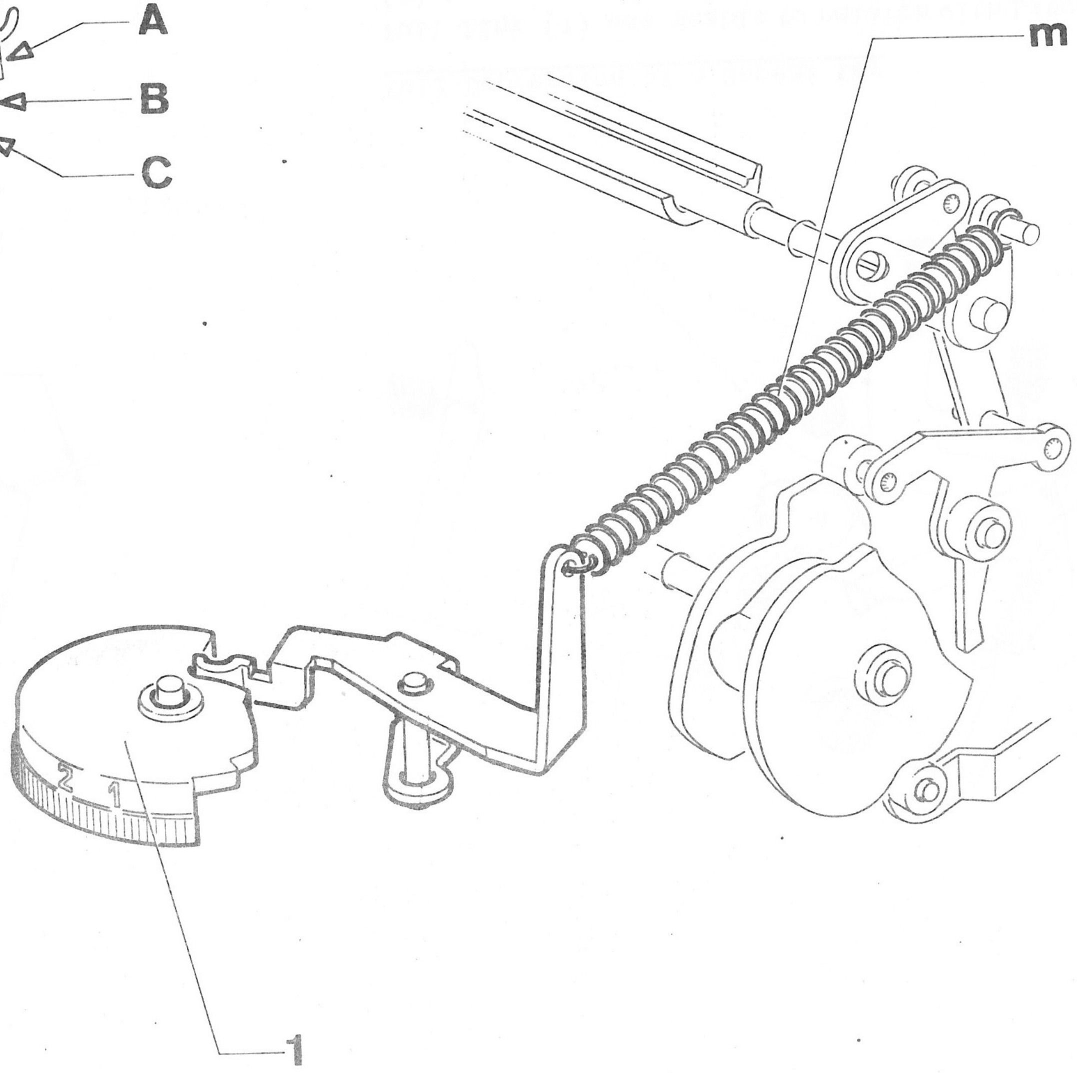
Pull Link (1) was able to relatch with Latch (3) because the profile of Pawl (2) was not rotated enough to hold Latch (3) rotated.



Full Depression of a Repeat Key

Pull Link (1) was unable to relatch with Latch (3) because the profile of pawl (2) holds it rotated.


A
B
C
C
B
A


m

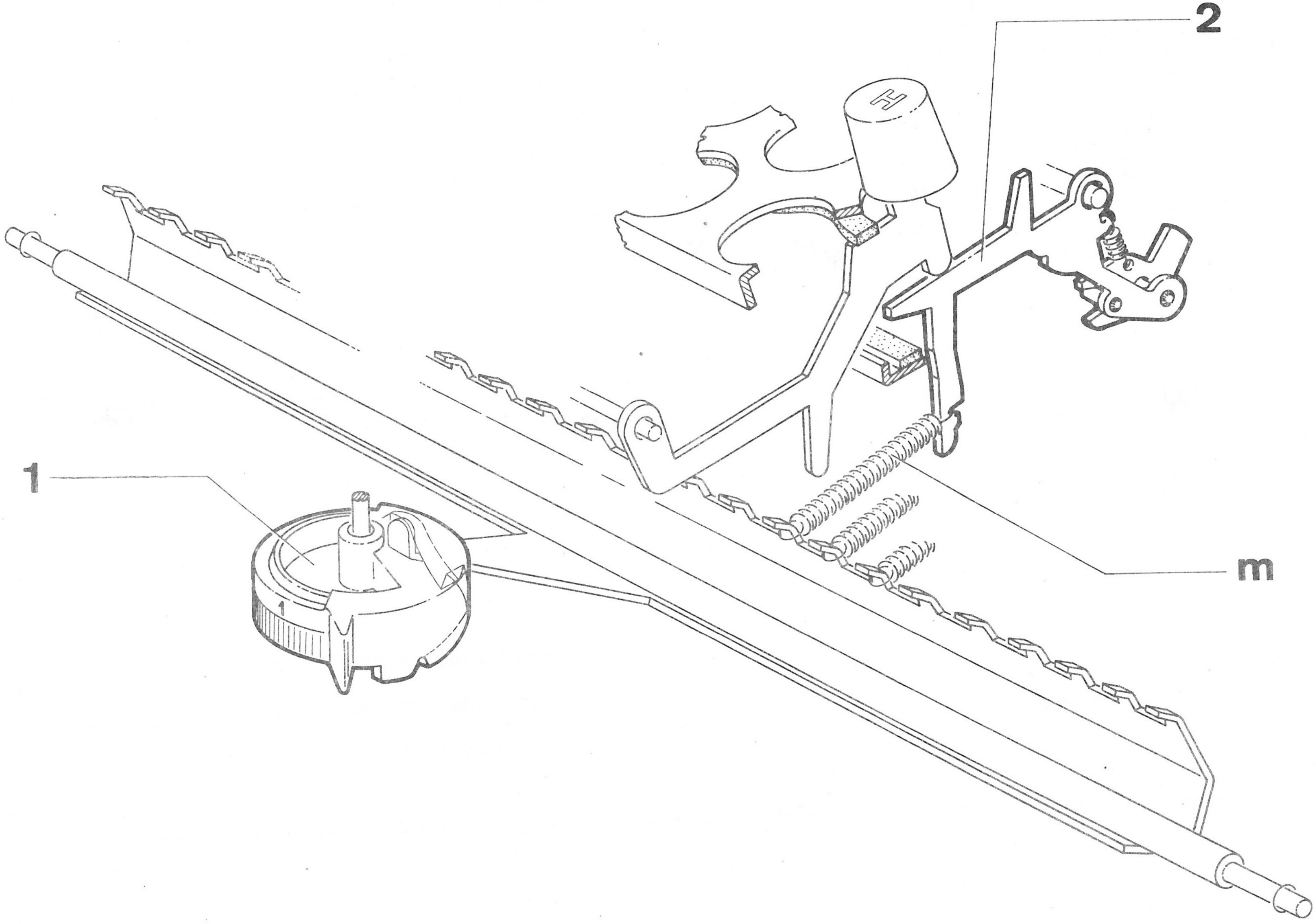
Impression Control

The Type Bar impression depends upon the setting (or the angular positions) of Link (1) which changes the tension of the Printing Spring (m):

Position A = light impression

Position B = medium impression

Position C = heavy impression


H
m

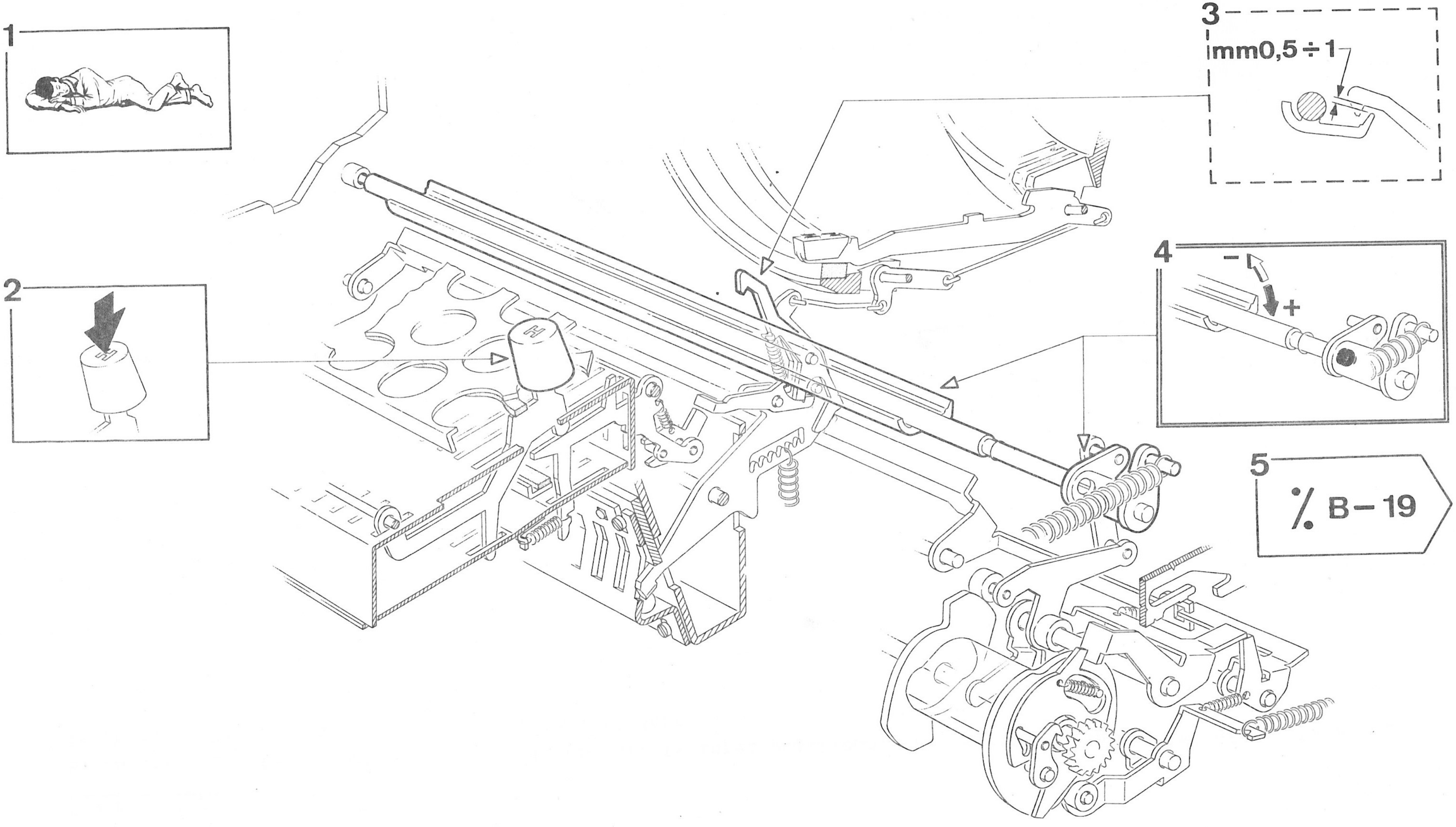
Touch Control

By rotating the Touch Control Dial (1) to one of its three positions, the tension of Spring (m) of the Lever (2) is changed. Consequently the force necessary to depress a Key is also changed.

① B-21
C-20

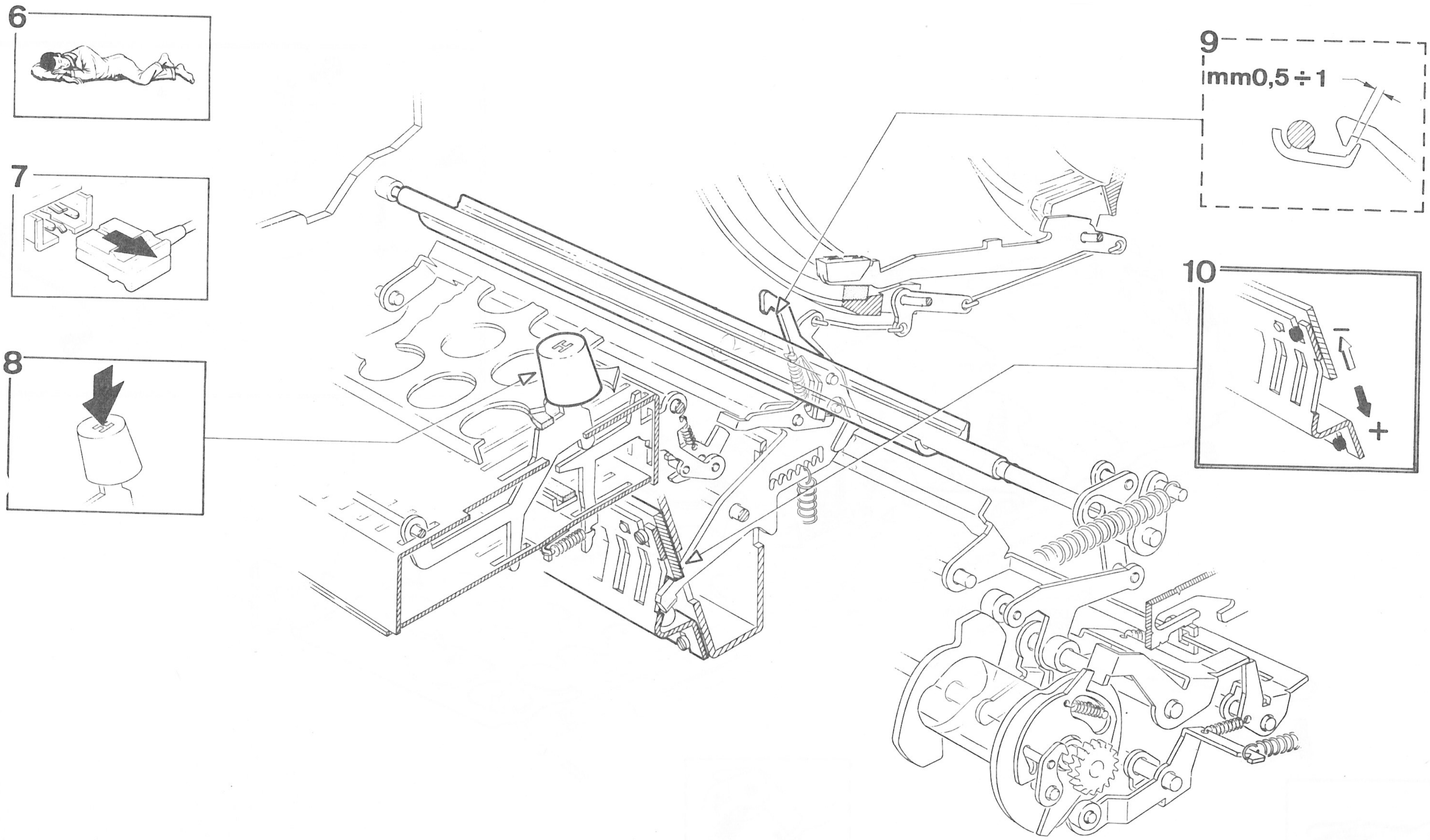
Checking the Angular Rest Position of the Type Action Bail and of the Bell Cranks

Upon depression of each Character Key, the condition illustrated on page B-2 (panel 2) must be realized.



Note - Repeat the test with a few keys in the center and at each side of the keyboard.

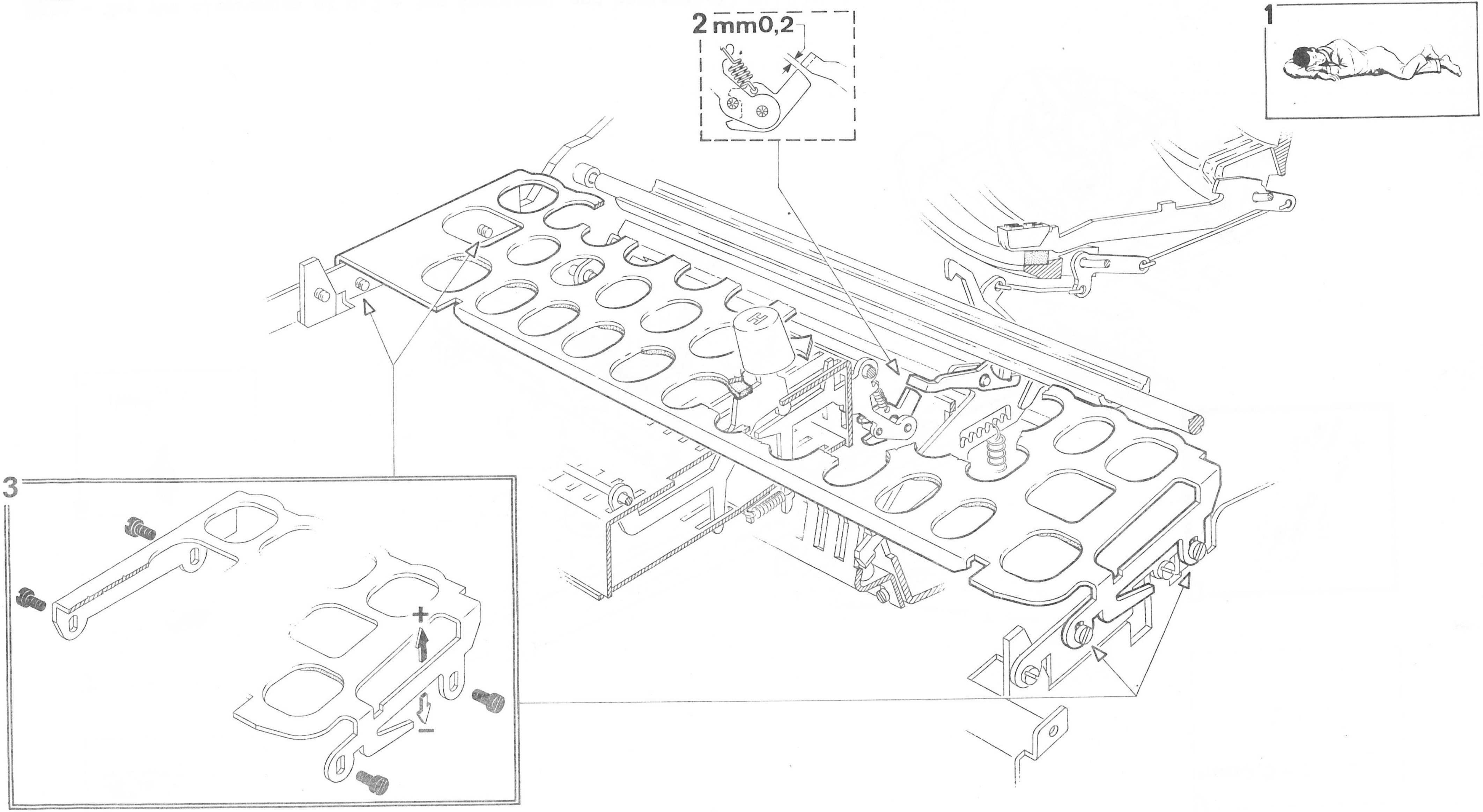
Checking the Angular Rest Position of the Type Action Bail and of the Bell Cranks (continued)



Note - The two clearances of 0.5 ÷ 1mm (vertical and horizontal) are obtained simultaneously, by the proper adjustment of the two facilities.

② H-11
L-24

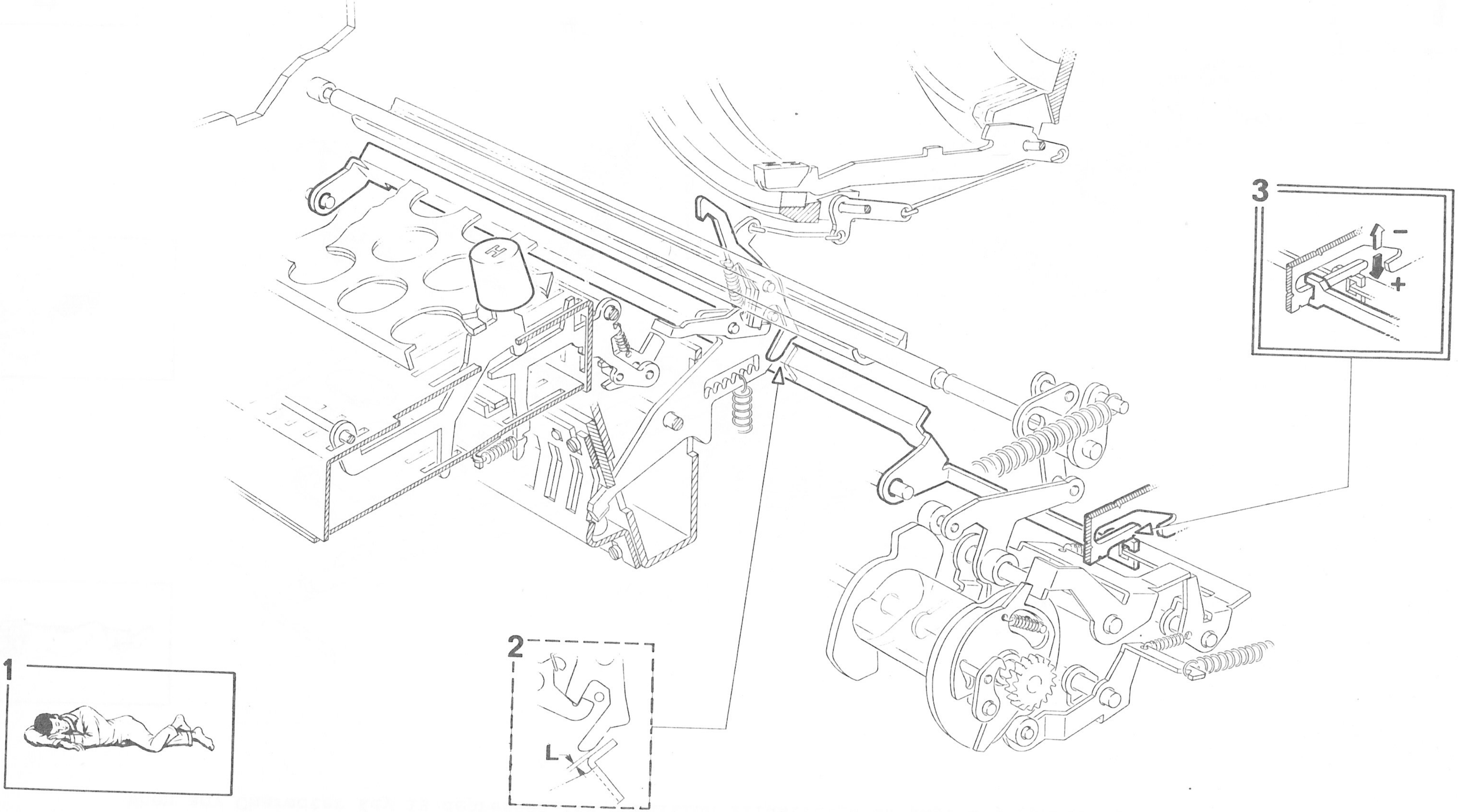
Checking the Rest Position of the Trip Pawls



Note - The check must be made using a few Character Keys at the center and at each end of the Keyboard.

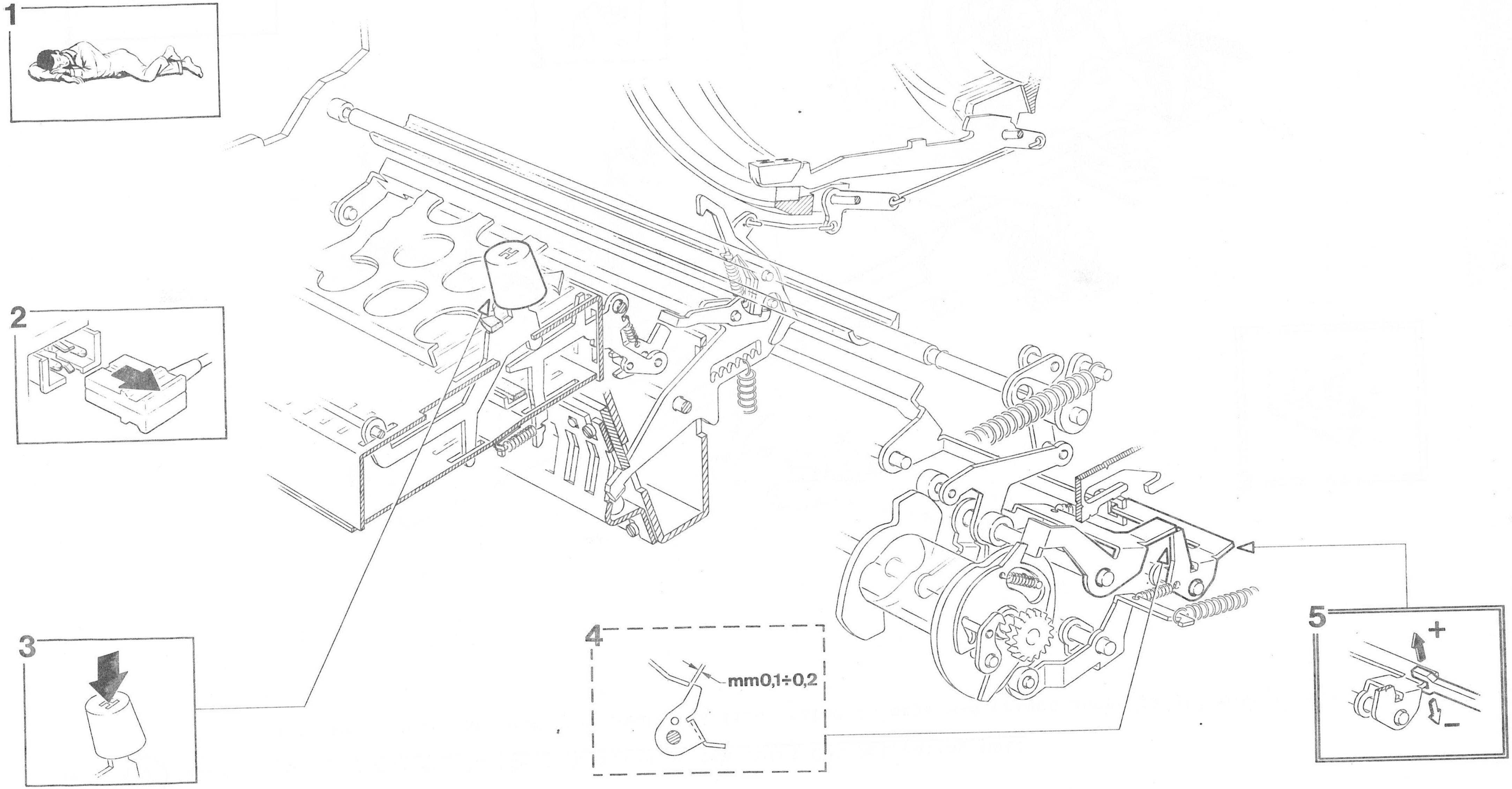
Checking the Angular Rest Position of the Print Cam Activating Bail

With the machine at rest, the condition illustrated on page B-4 (right upper panel) must be verified.



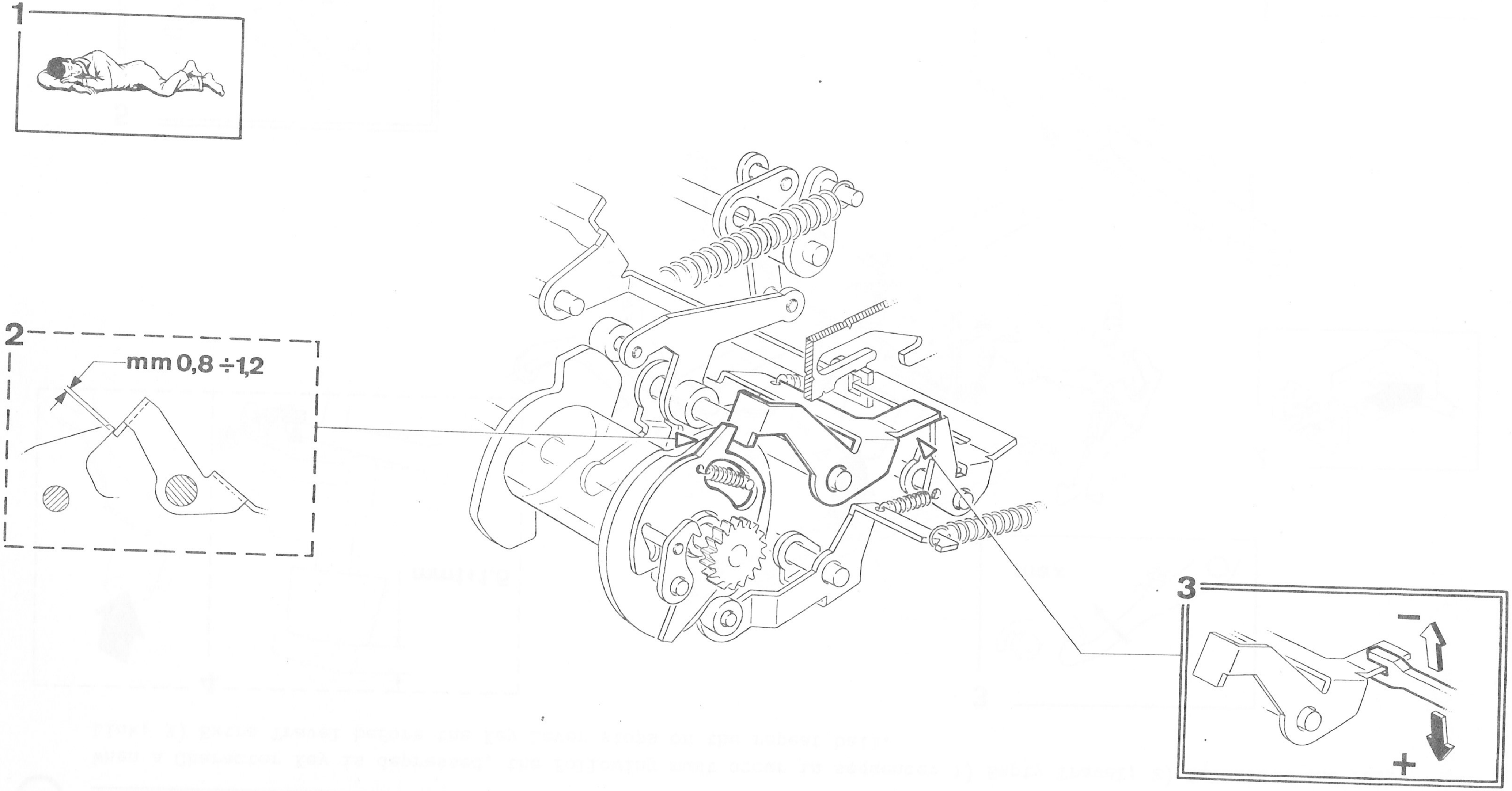
B-21 ④ Checking the Release of the Starting Lever

When any Character Key is depressed the condition illustrated on page B-6 (panel 8) must be realized.



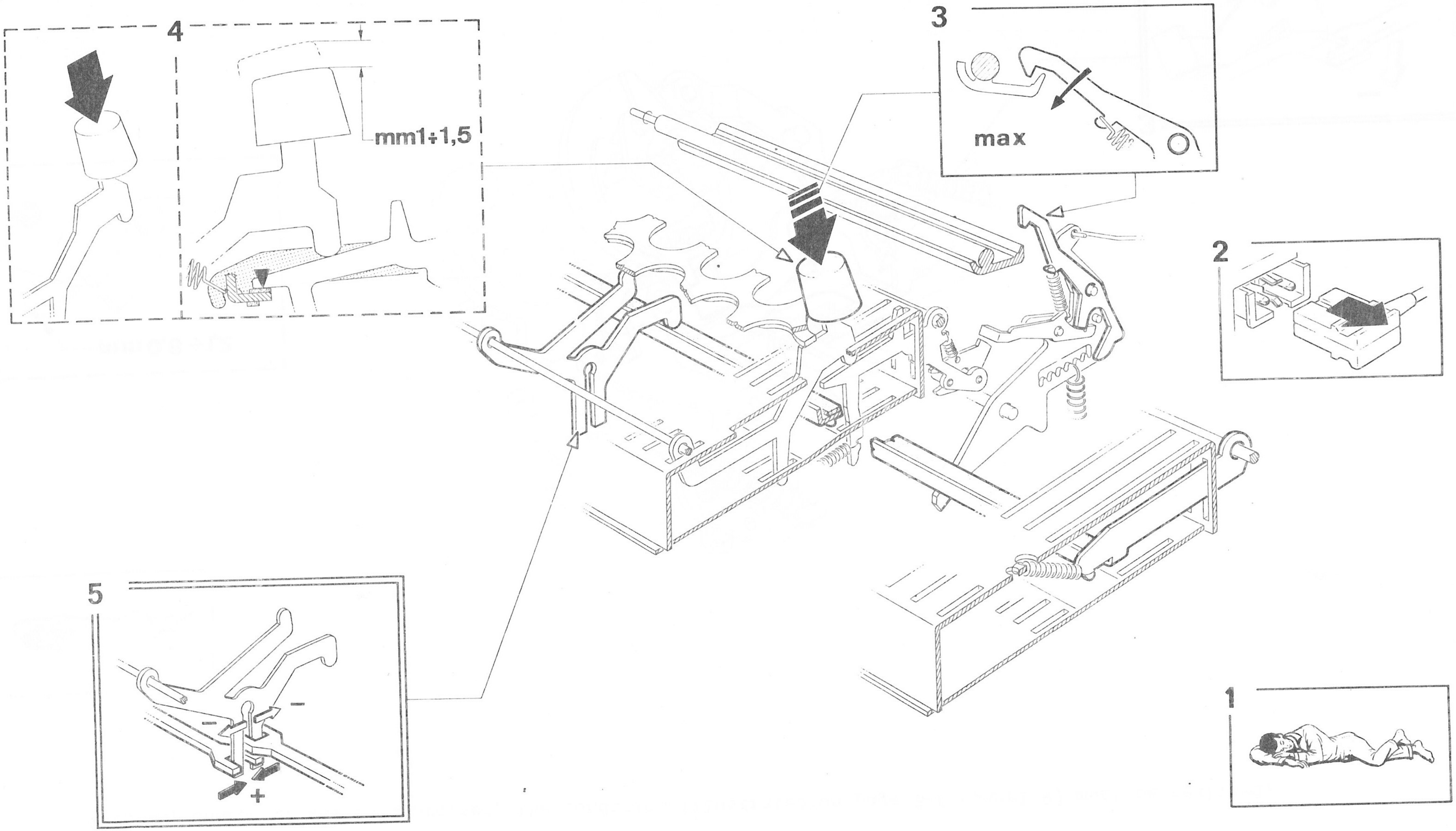
⑤ Checking the Hold of the Starting Lever on the Flange

When any Character Key is depressed, the condition illustrated on page B-6 (panel 9) must be realized.



⑥ Checking the Rest Position of the Repeat Frame

When a Character Key is depressed, the following must occur in sequence: 1) Empty Travel; 2) Release of the Pull Link; 3) Extra Travel before the Key Lever stops on the repeat bail.

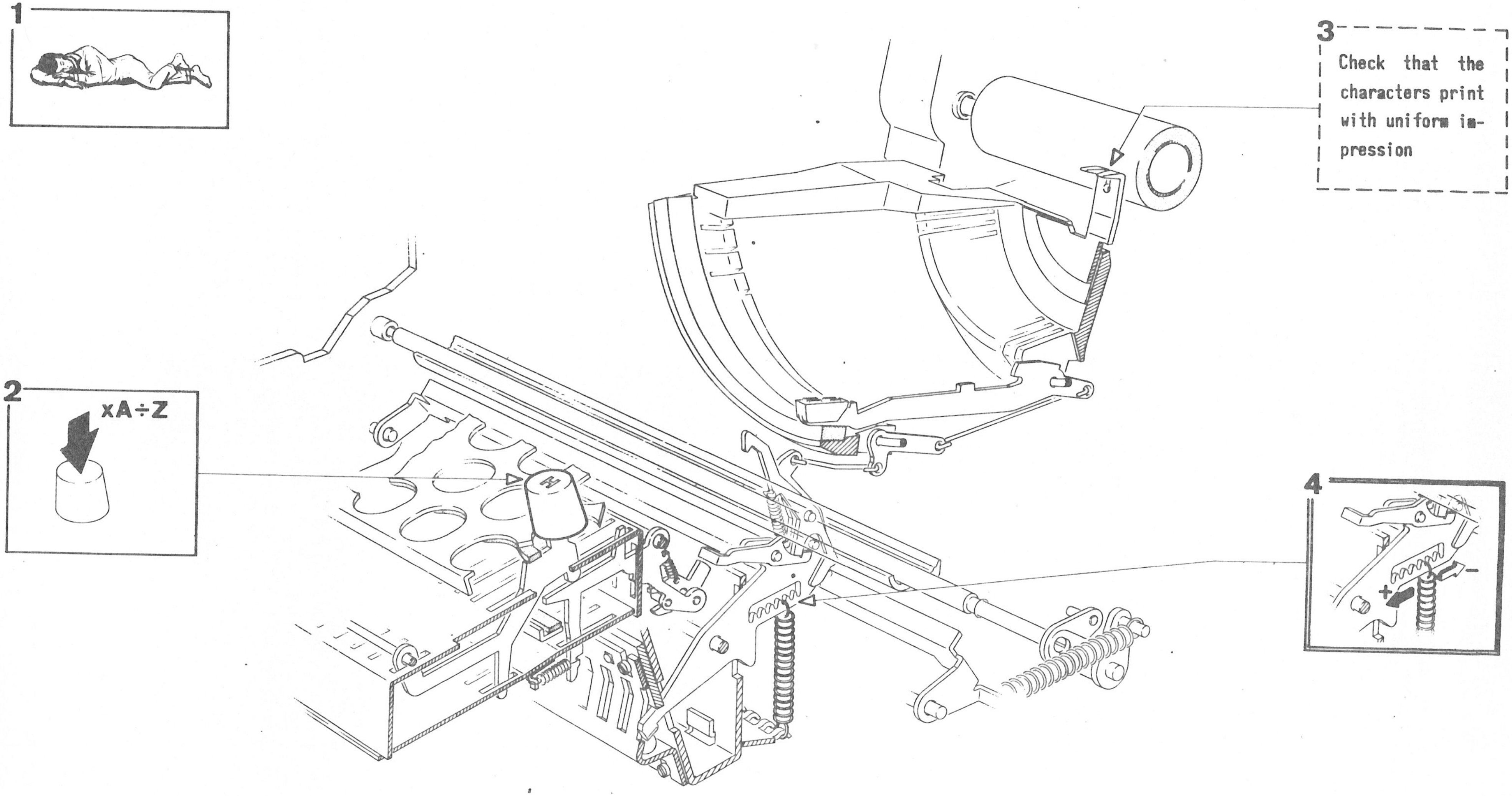


Note - Repeat this check with a few keys in the center and at each side of the keyboard.

F-13 ⑦

Checking the Uniformity of Impression

All Characters must be printed with equal impression.

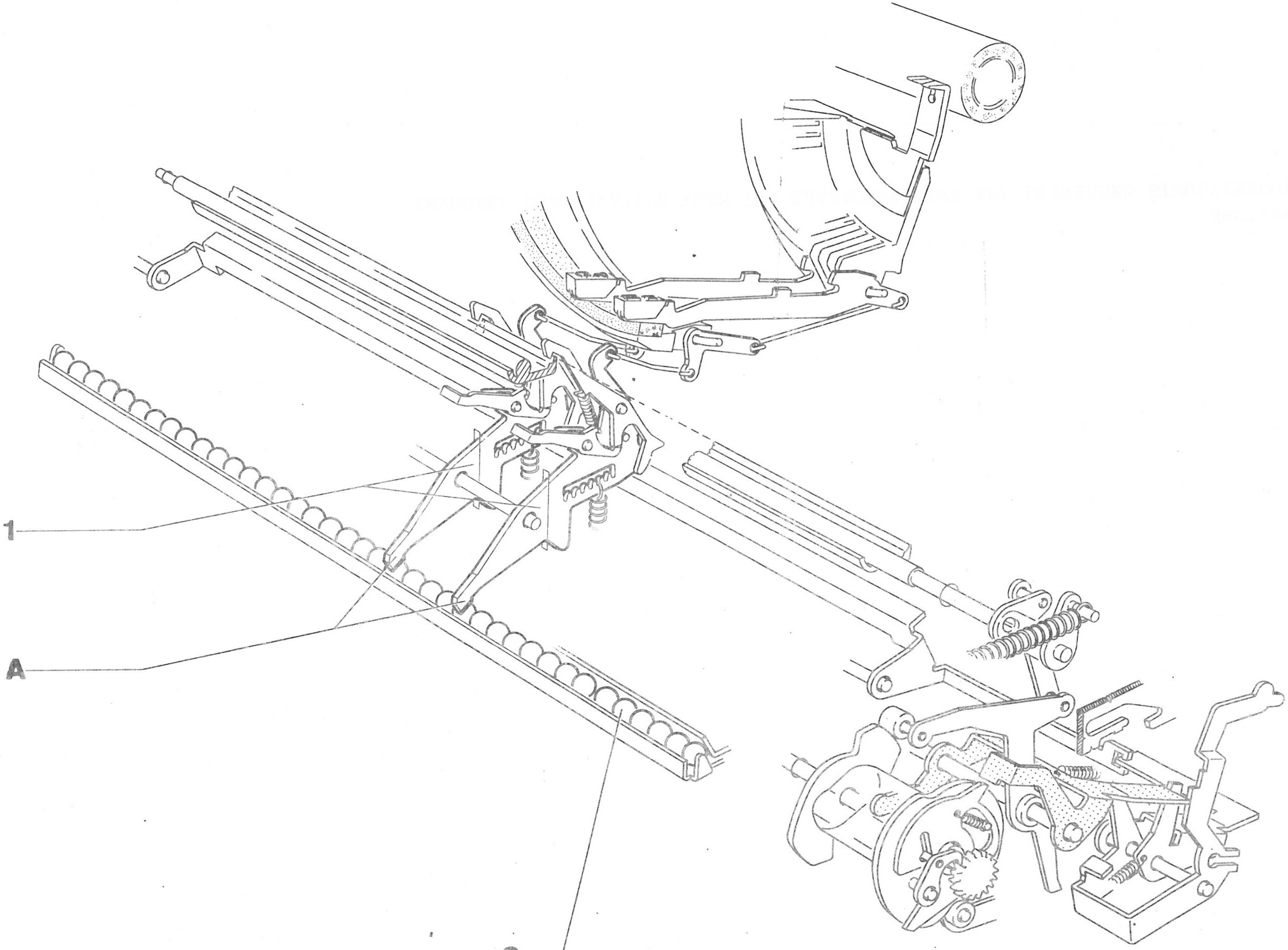


Check that the characters print with uniform impression

Note - Move in the + direction if the character is not bold enough; in the − direction if the character is too bold.

Section C

KEYBOARD DEACTIVATION WHEN TWO CHARACTER KEYS ARE DEPRESSED SIMULTANEOUSLY


1
A
2

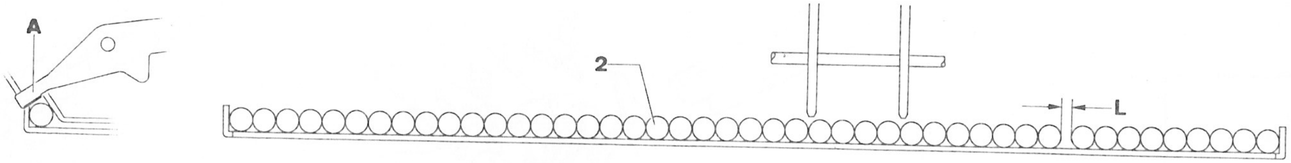
Foreword

When two Character Keys are depressed simultaneously:

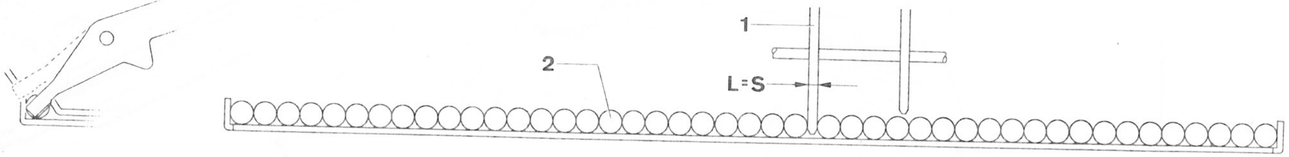
- the Type Bars are not rotated to the Platen due to the locking of the Bell Cranks
- deactivation of the Keyboard occurs (locking of the Print Clutch)
- deactivation of the Space Bar occurs (see page P-7).

Locking of the Bell Cranks

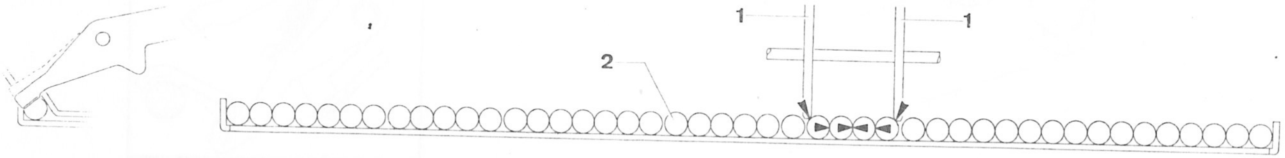
In the path of extension (A) of the Bell Cranks (1), there is a series of steel balls (2), installed in a special container.
The steel balls (2) do not occupy the full length of the container (clearance (L) remains).

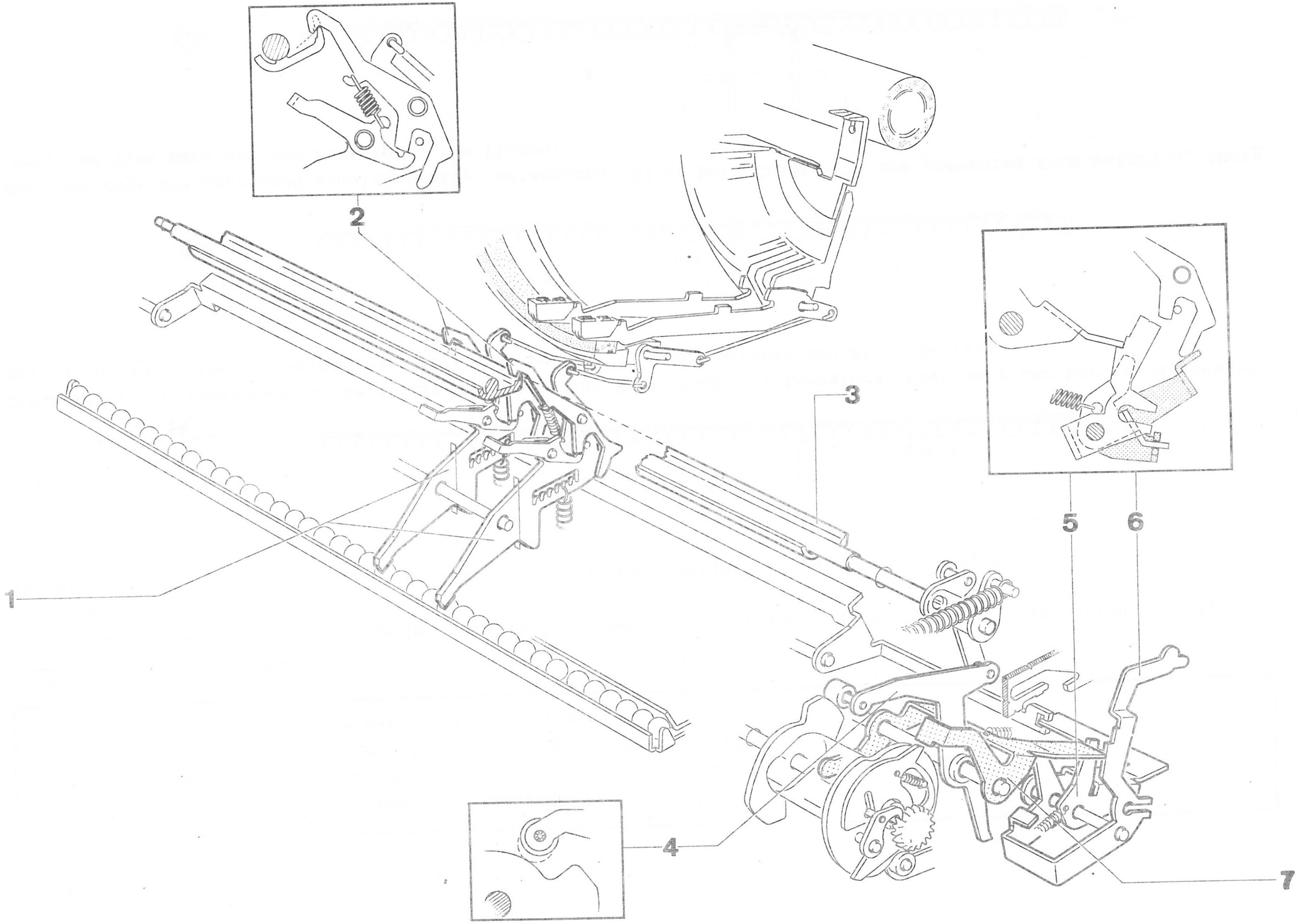


Clearance (L) corresponds to the thickness (S) of one Bell Crank (1) therefore, when only one key is depressed, extension (A) of the corresponding Bell Crank can freely enter between two steel balls.



When two keys are depressed simultaneously, extensions (A) of Bell Cranks (1) are prevented from entering, therefore, the Type Bars are not rotated to the Platen.





Locking the Print Clutch

An incomplete rotation of two Bell Cranks (1) causes the following:

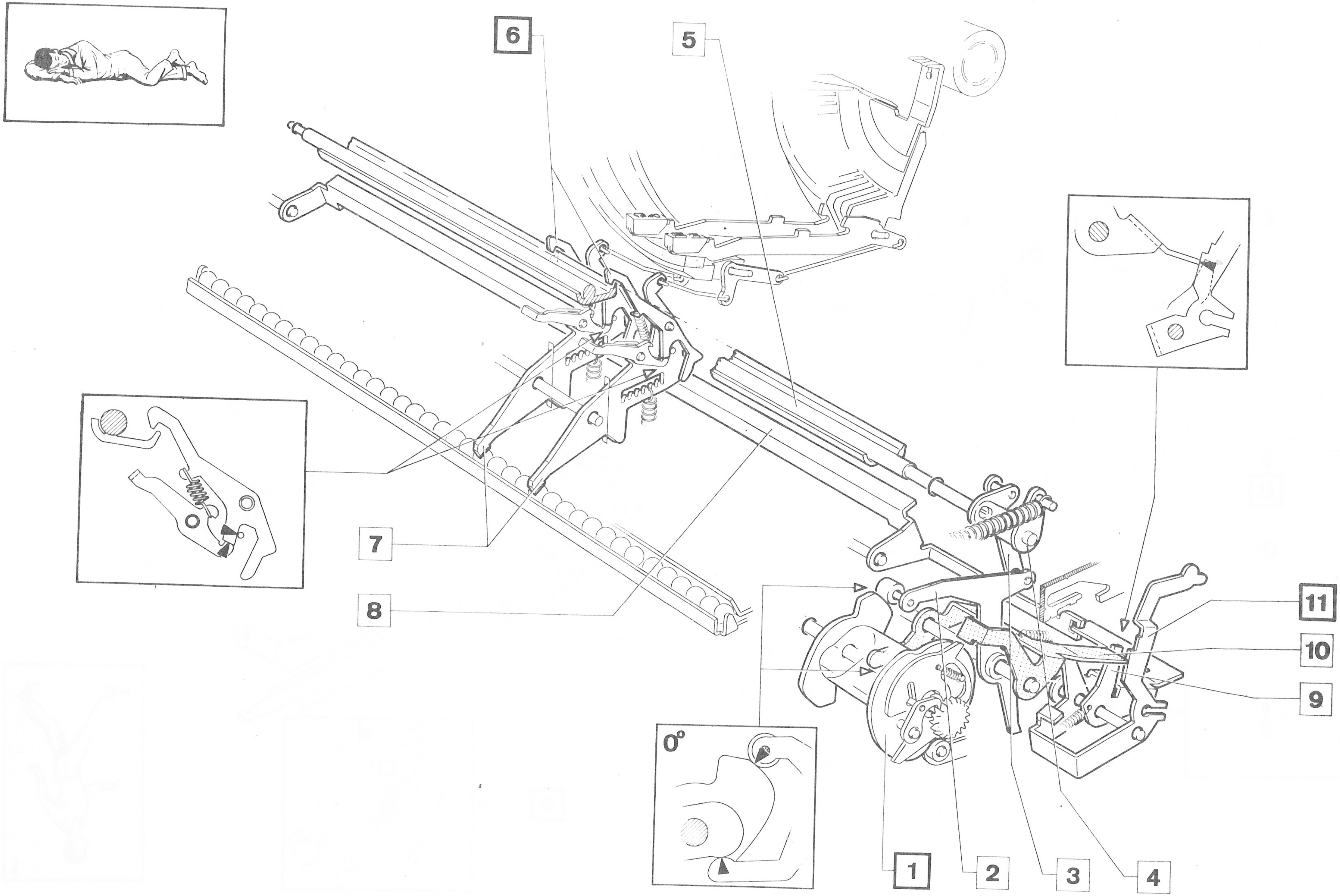
a) the two Pull Links (2) do not relatch to their respective Latches, therefore, Latch (5) cannot rotate under Bridge (7).

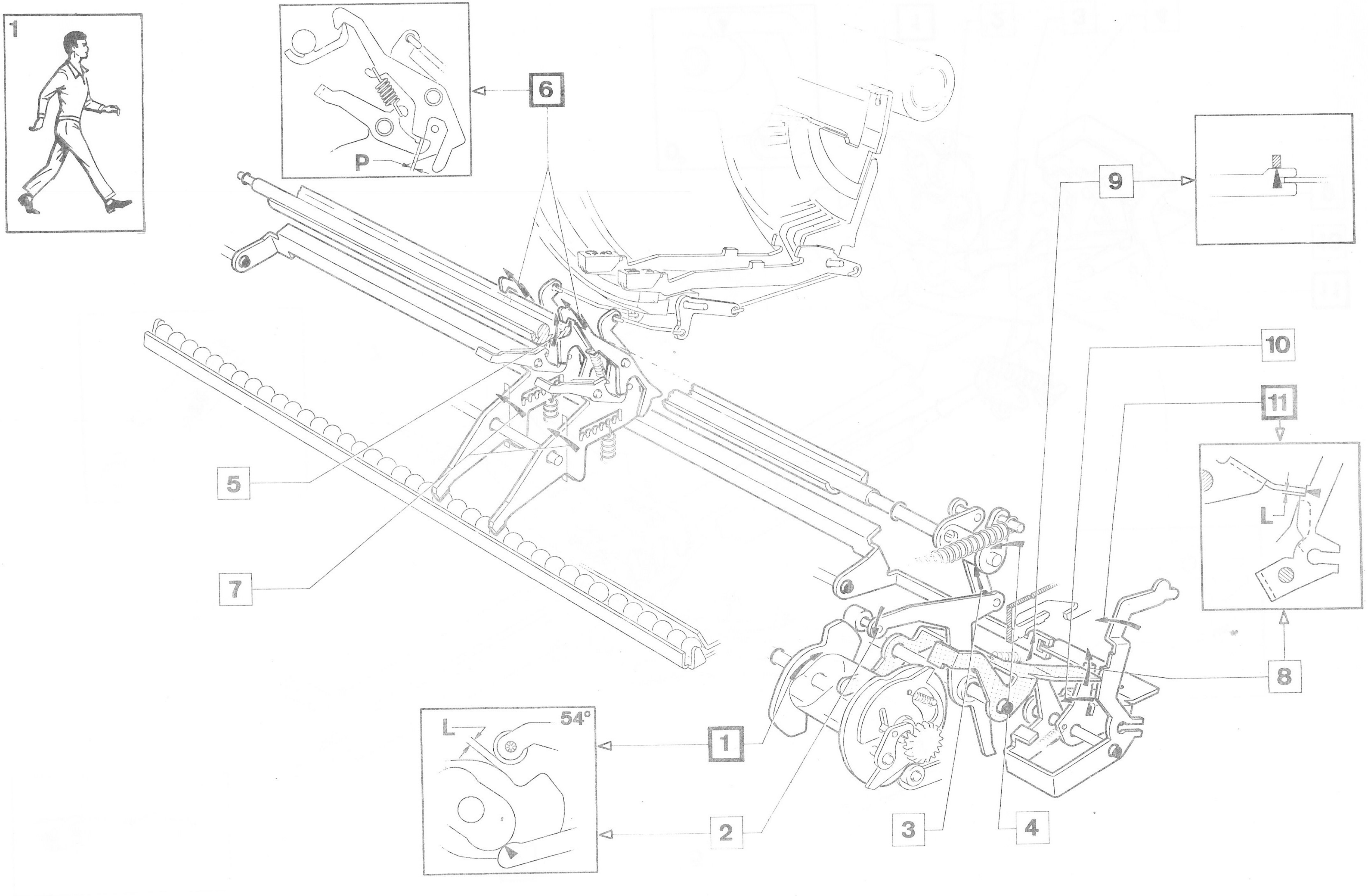
b) the Type Action Bail (3) and Cam Follower (4) also make an incomplete rotation (the broken line shows the normal operation of the Cam Follower Roller) consequently, Bridge (6) can rotate under Bridge (7).

The Print Clutch is no longer controlled by Bridge (5) and cannot be disengaged by depressing the Character Key.

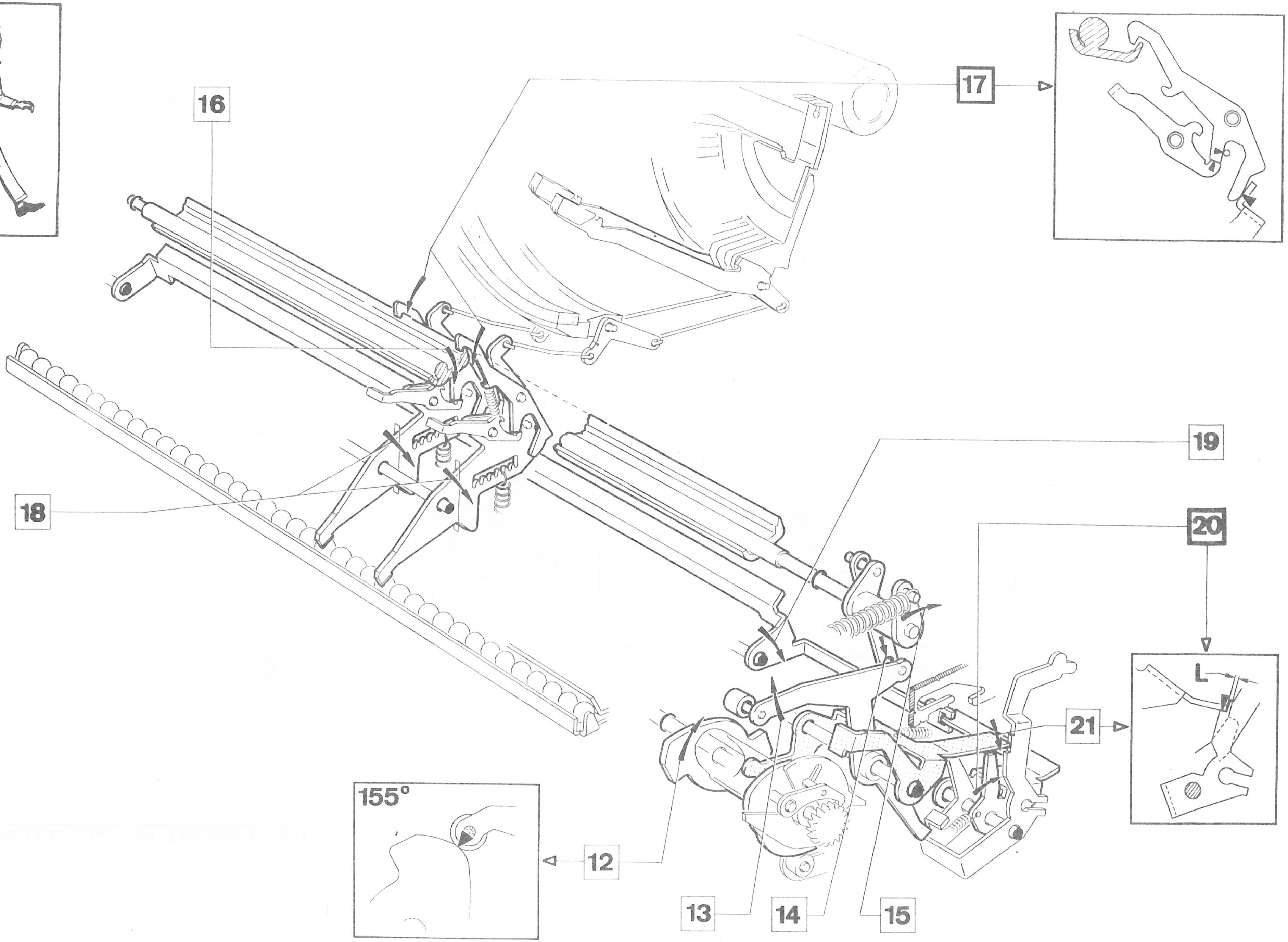
Note

In the following illustrations two keys have already been depressed. Therefore, only the operation of the mechanism which follows the depression of two keys is shown.

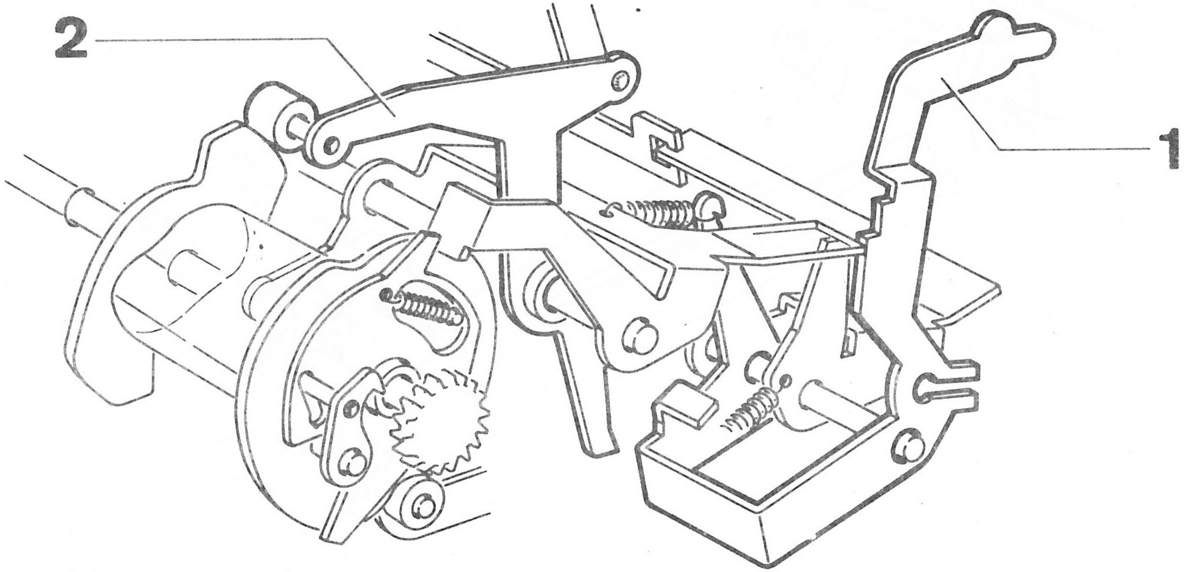

0°


P
L
L
54°

2


17
16
19
20
L
21
18
155°
12
13
14
15

Controlling the Keyboard Lock

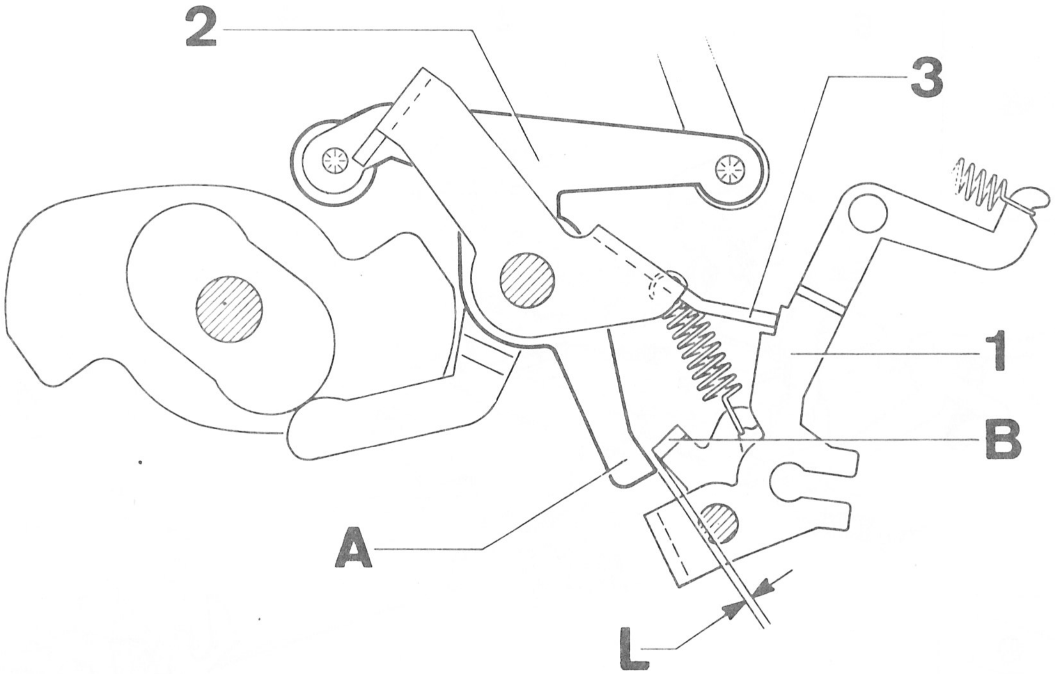


Bridge (1), which controlls the Clutch after two keys are depressed simultaneously, moves Bridge (3). When only one key is depressed, however, the function of Bridge (1) must be prevented. This is accomplished by Cam Follower (2) as illustrated on the next page.

Simultaneous depression of two keys

Cam Follower (2) has not completed its rotation, therefore, extension (A) does not contact lip (B) of Bridge (1) thus allowing Bridge (1) to control Bridge (3).

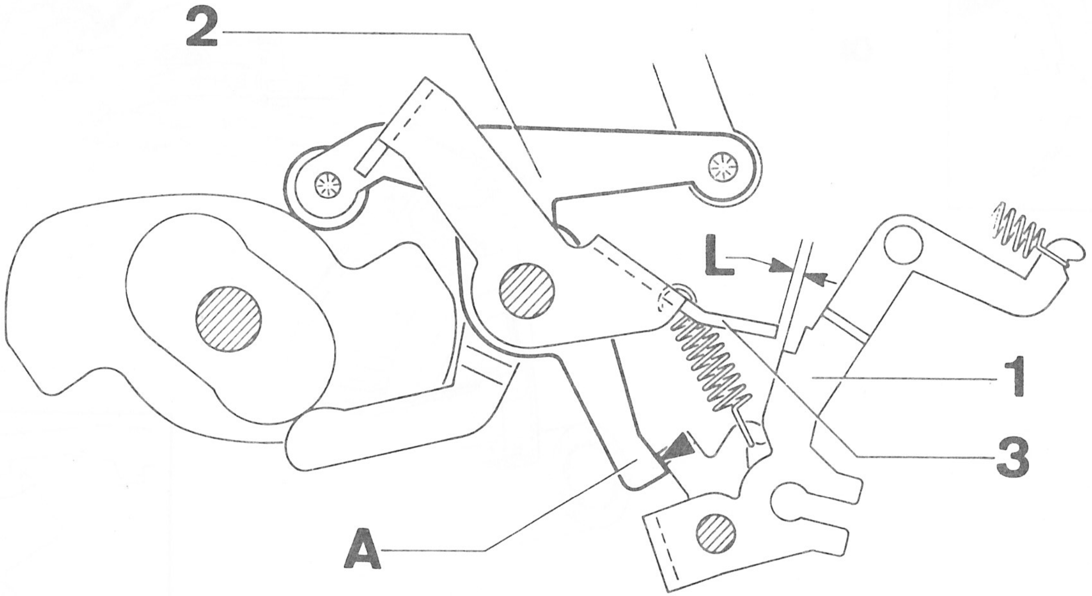
THE CLUTCH IS DEACTIVATED.

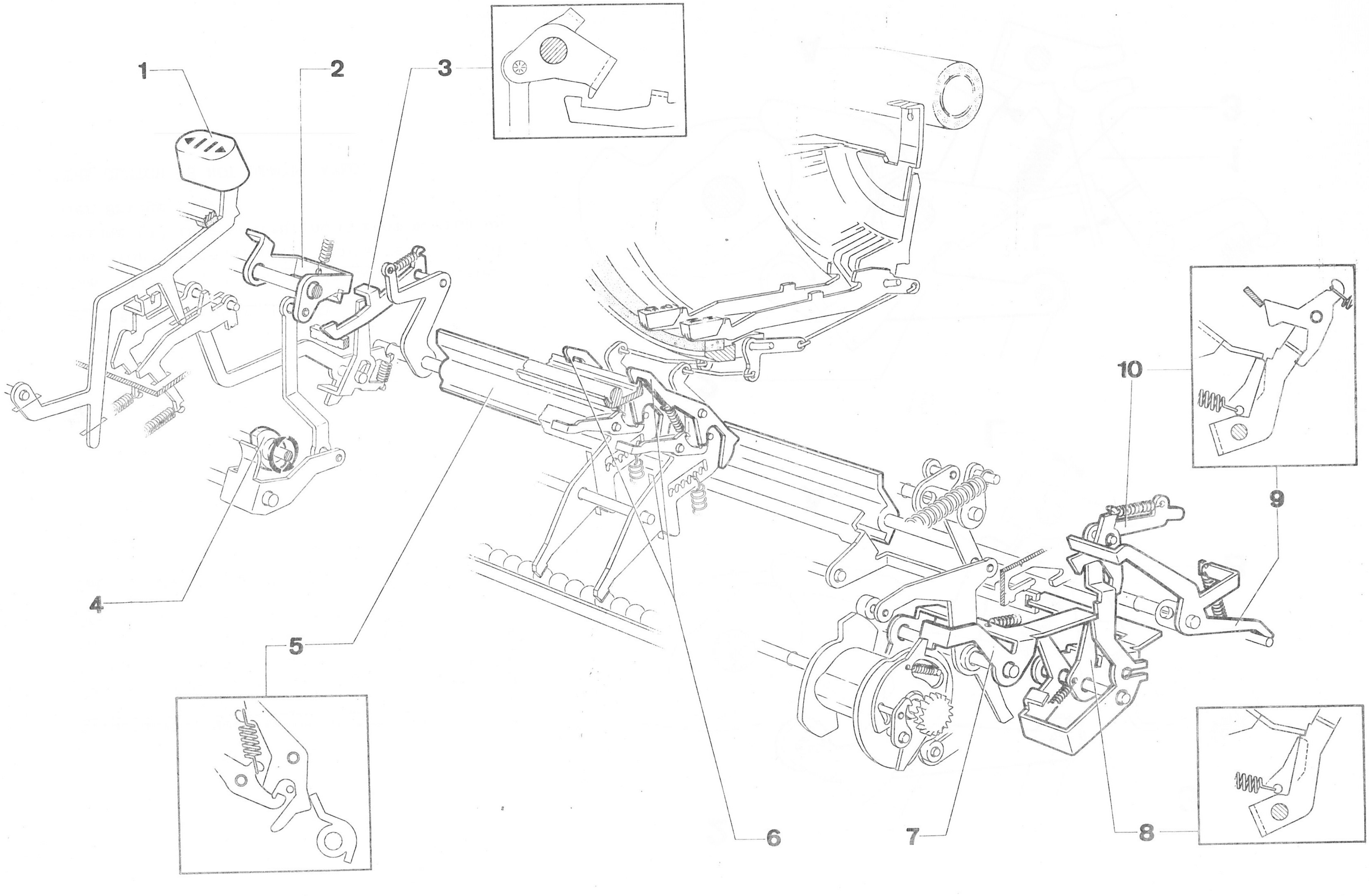


Depression of only one key

Cam follower (2) has completed its rotation, therefore, extension (A) contacts lip (B) of Bridge (1) thus preventing it from moving under Bridge (3).

THE CLUTCH IS NOT DEACTIVATED.





Unlocking the Keyboard

By depressing the Margin Release key, the unlatched Pull Links are relatched and the Clutch reactivated.

Command Mechanism

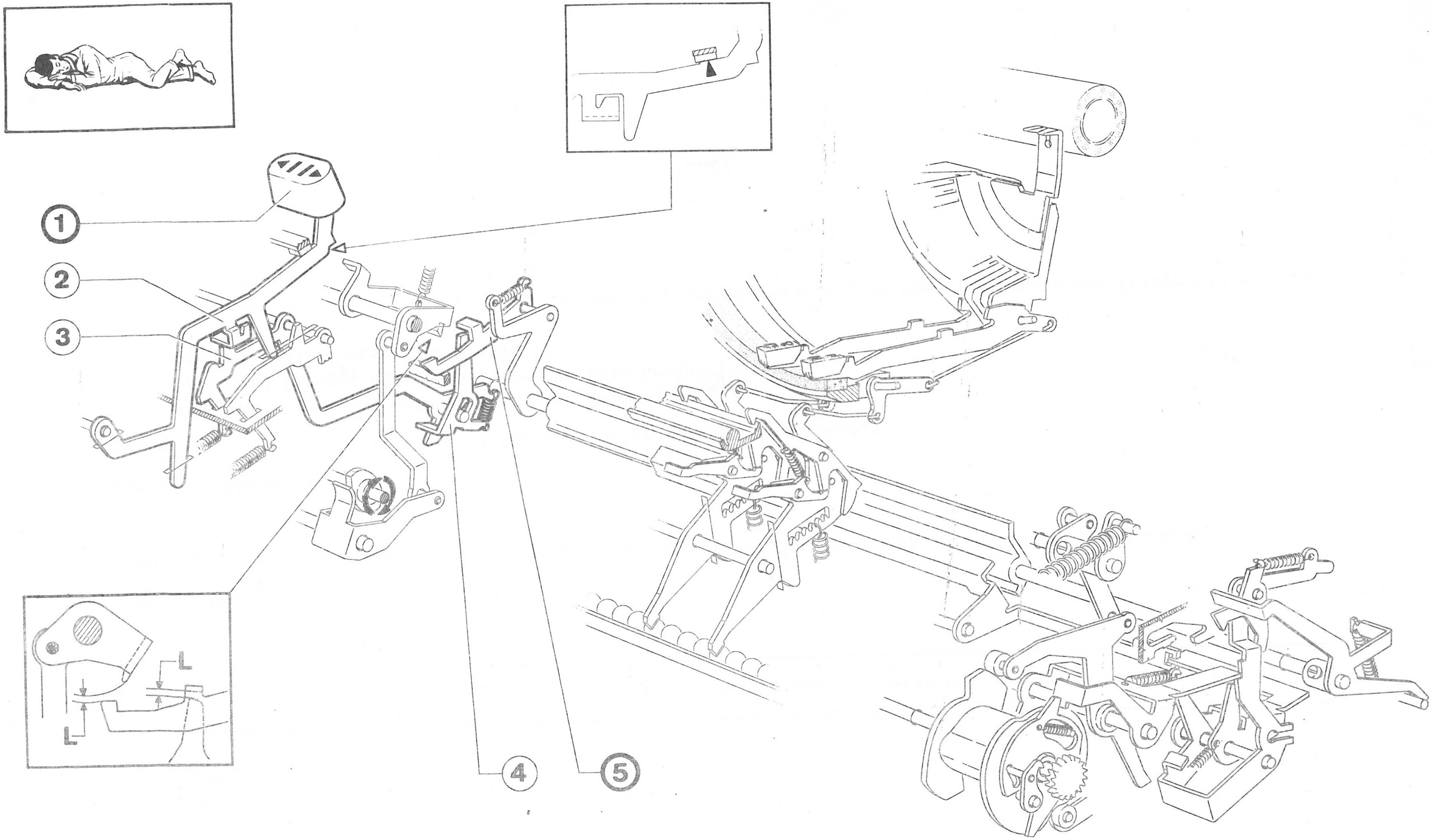
When Key (1) is held depressed, Pawl (3) gets in the path of Bridge (2) which oscillates continuously.

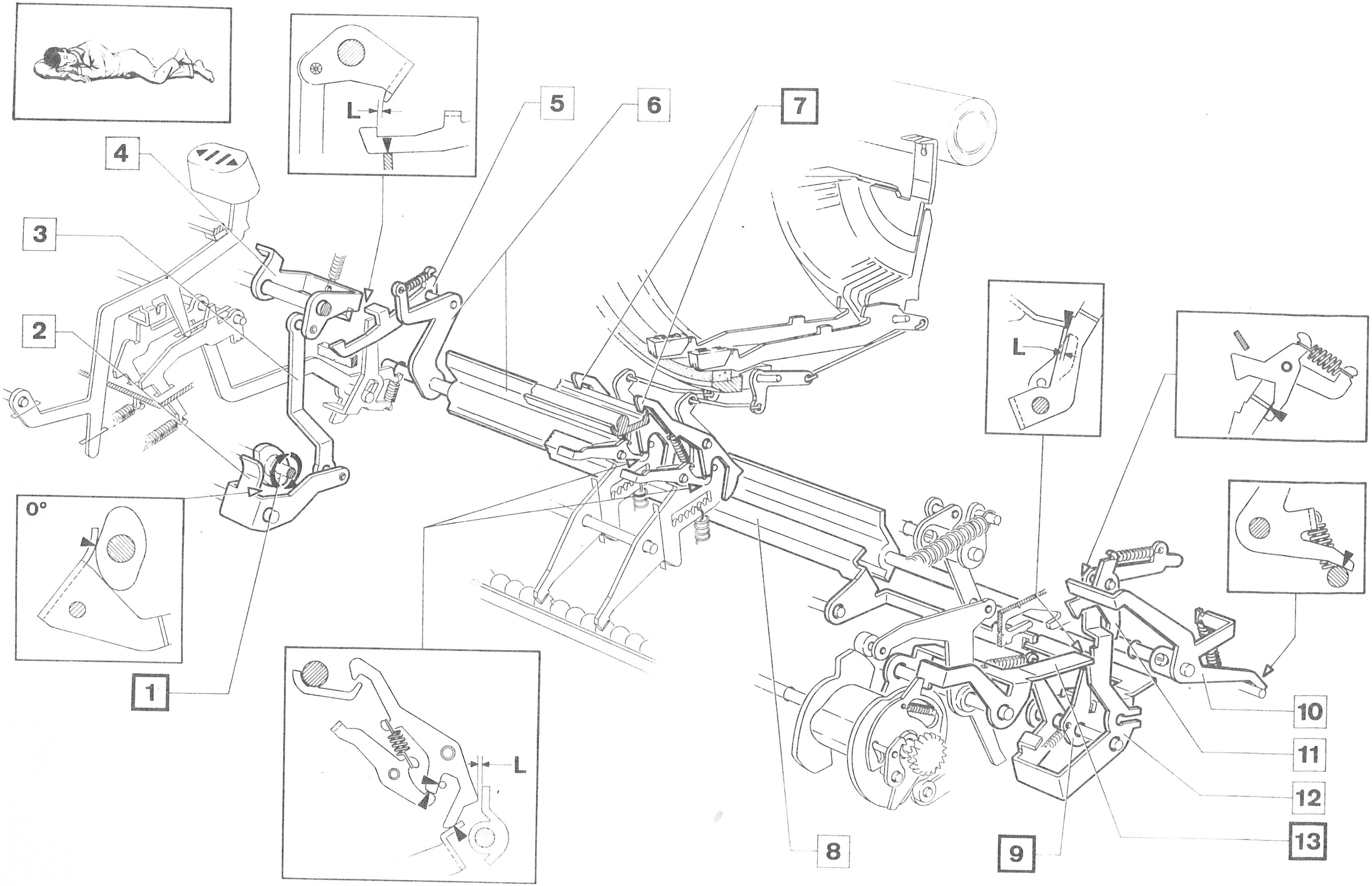
Operation Mechanism

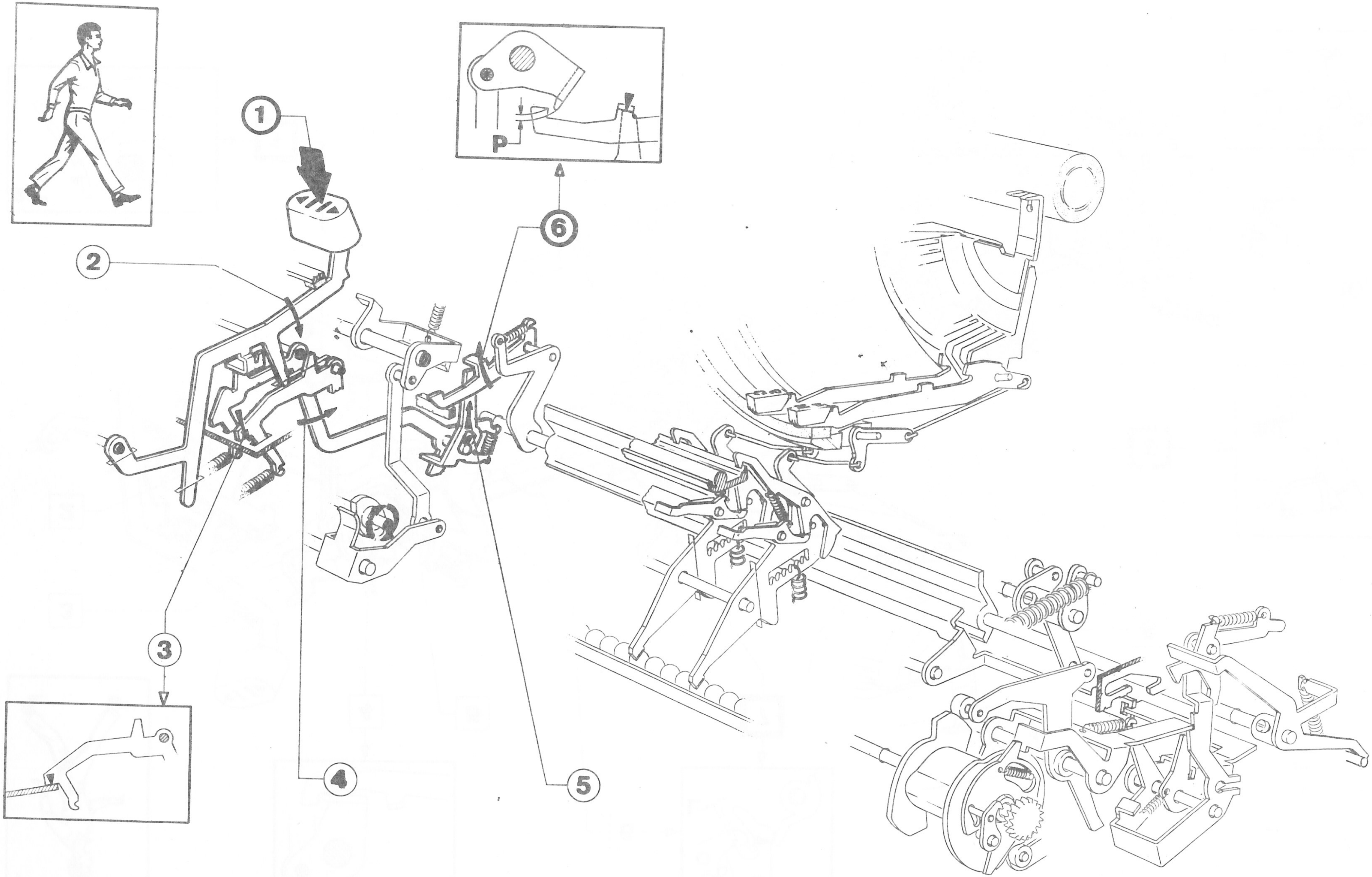
During the first 90° of rotation of Cam (4) (which rotates continuously):

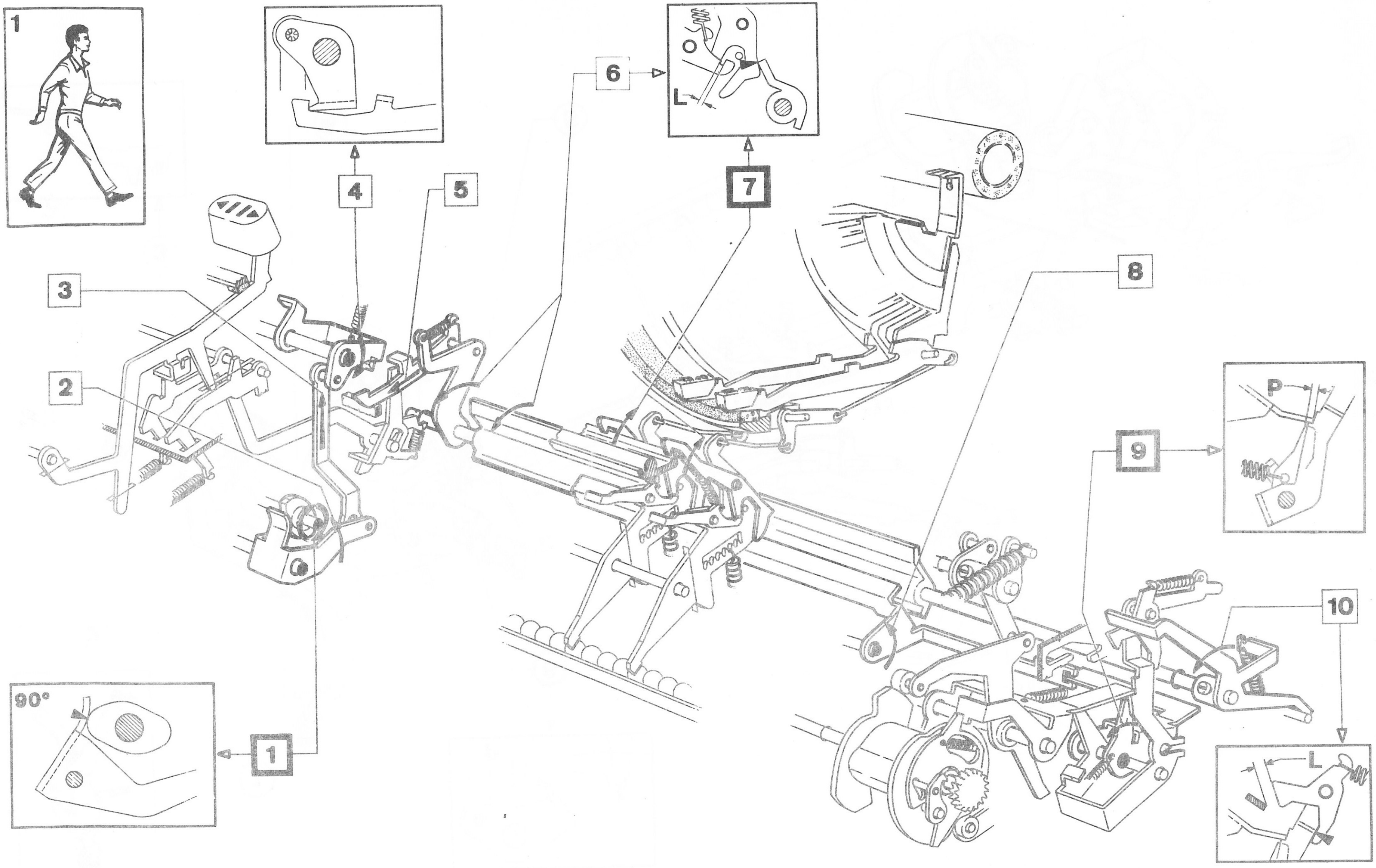
- the reset Frame (5) relatches the two Pull Links (6)
- Latch (8) returns under the Clutch Release Bridge (7)
- Arm (9) rehooks itself to Bridge (10)

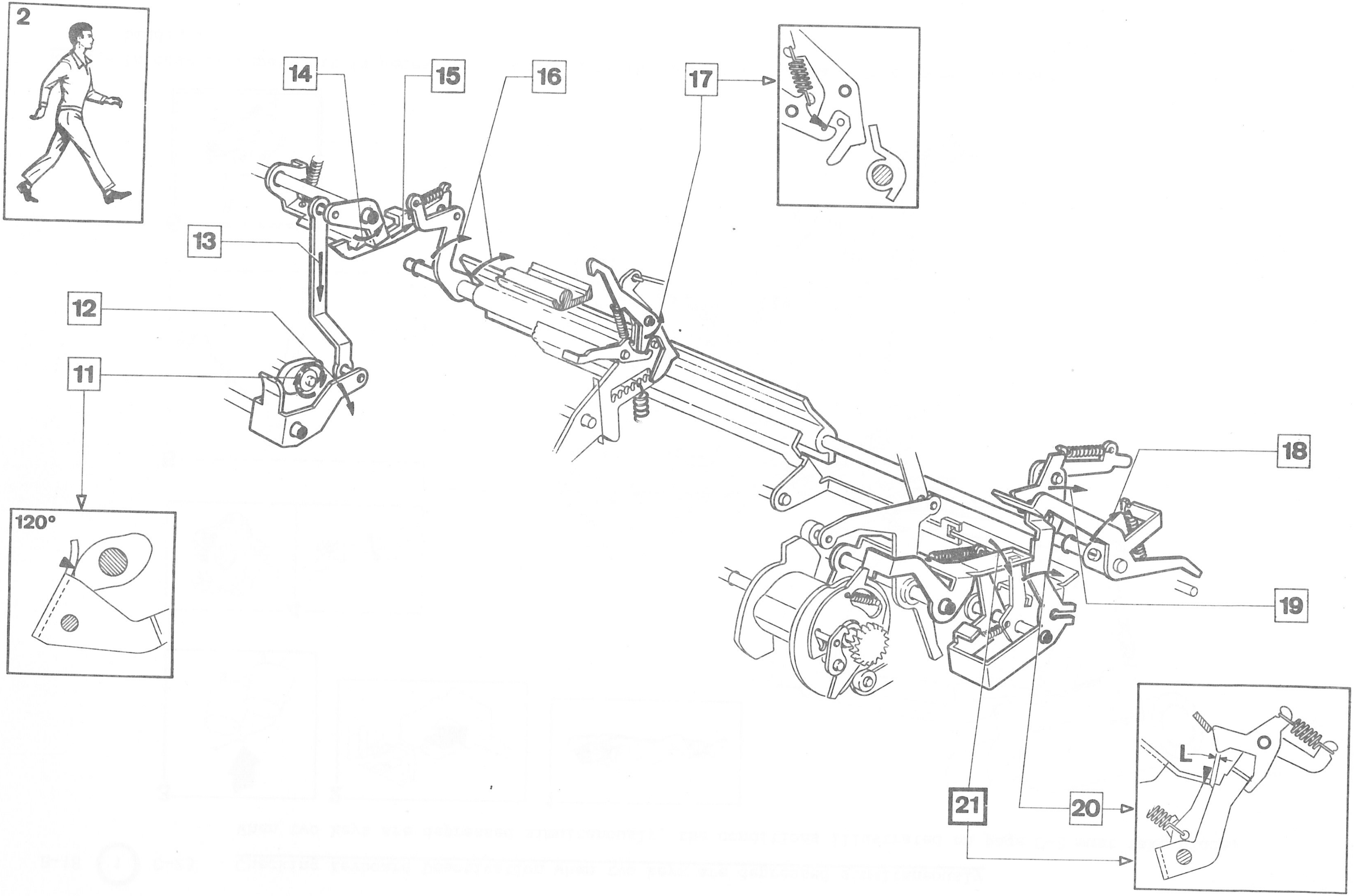
During the next (or second) 90° rotation of Cam (4), Arm (9) removes. Bridge (10) from under Bridge (7) so that Bridge (7) can return to rest on Latch (8).


①
2
3
L
L
4
⑤


L
0°
L
L


P

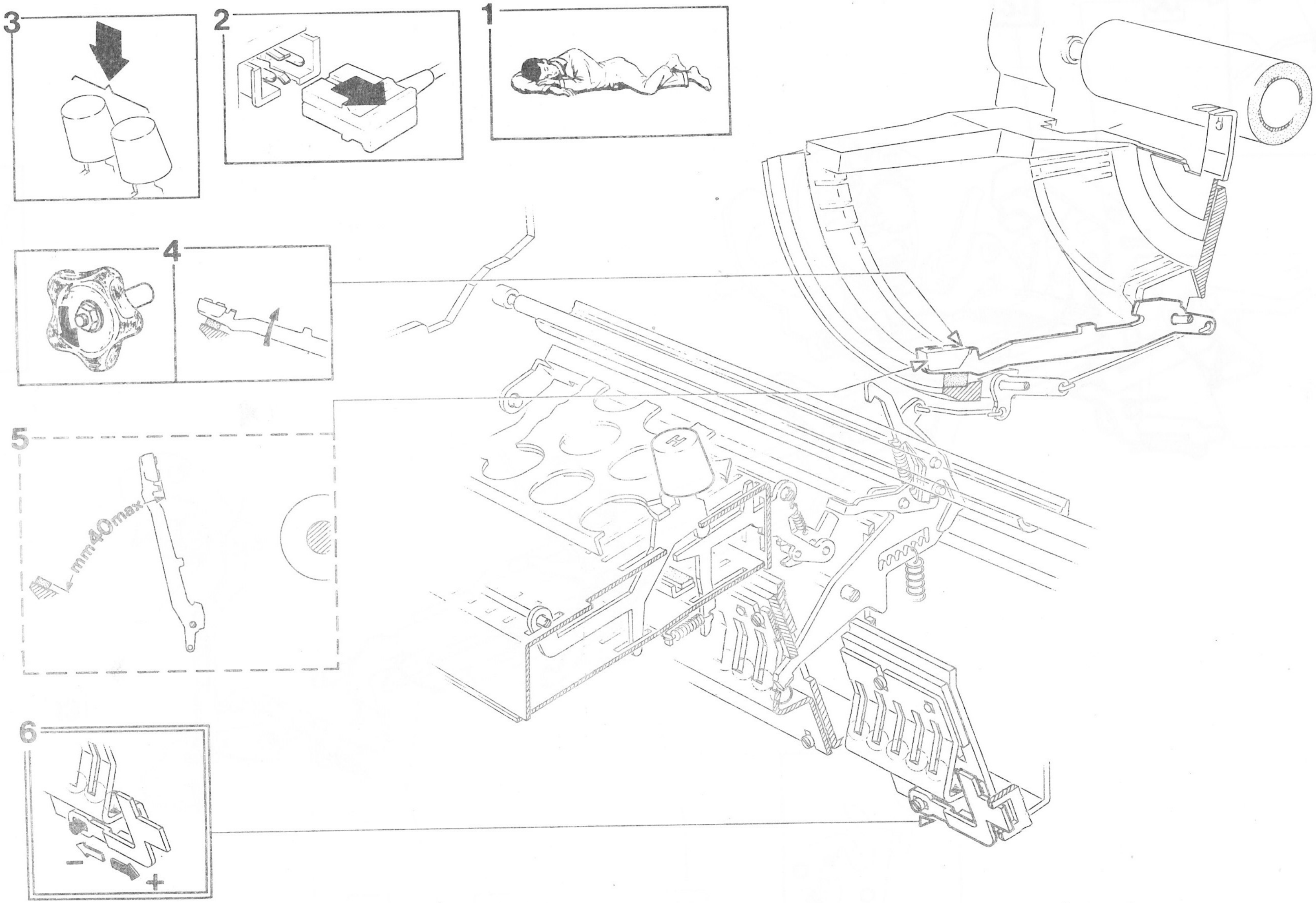

P
90°
L
L


120°
L

B-18 ① C-23

Checking Keyboard Deactivation when two keys are depressed simultaneously

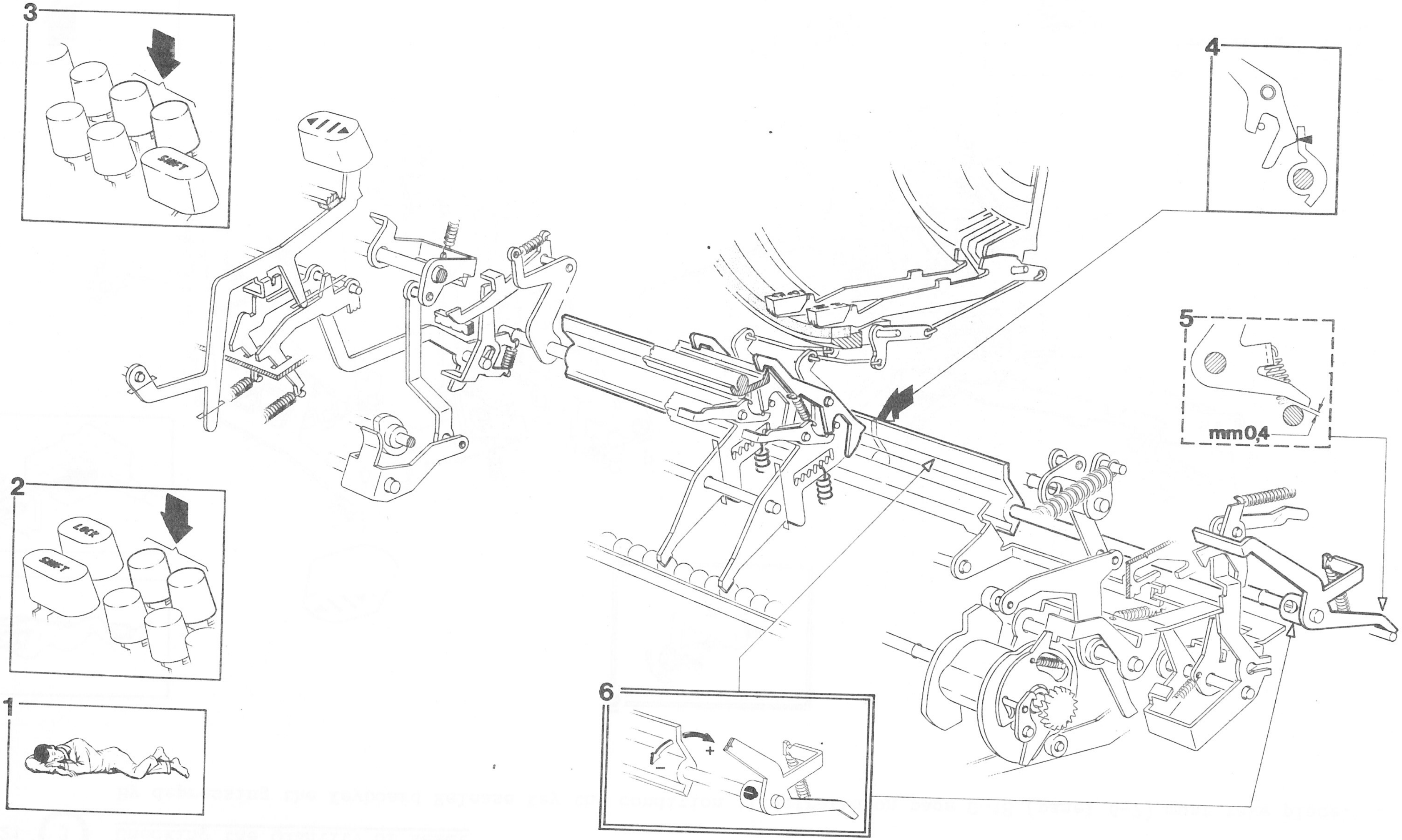
When two keys are depressed simultanously, the conditions illustrated on page C-3 must take place.



Note - In case of repair, it is necessary to check that the bell Cranks remain free to move without binding.

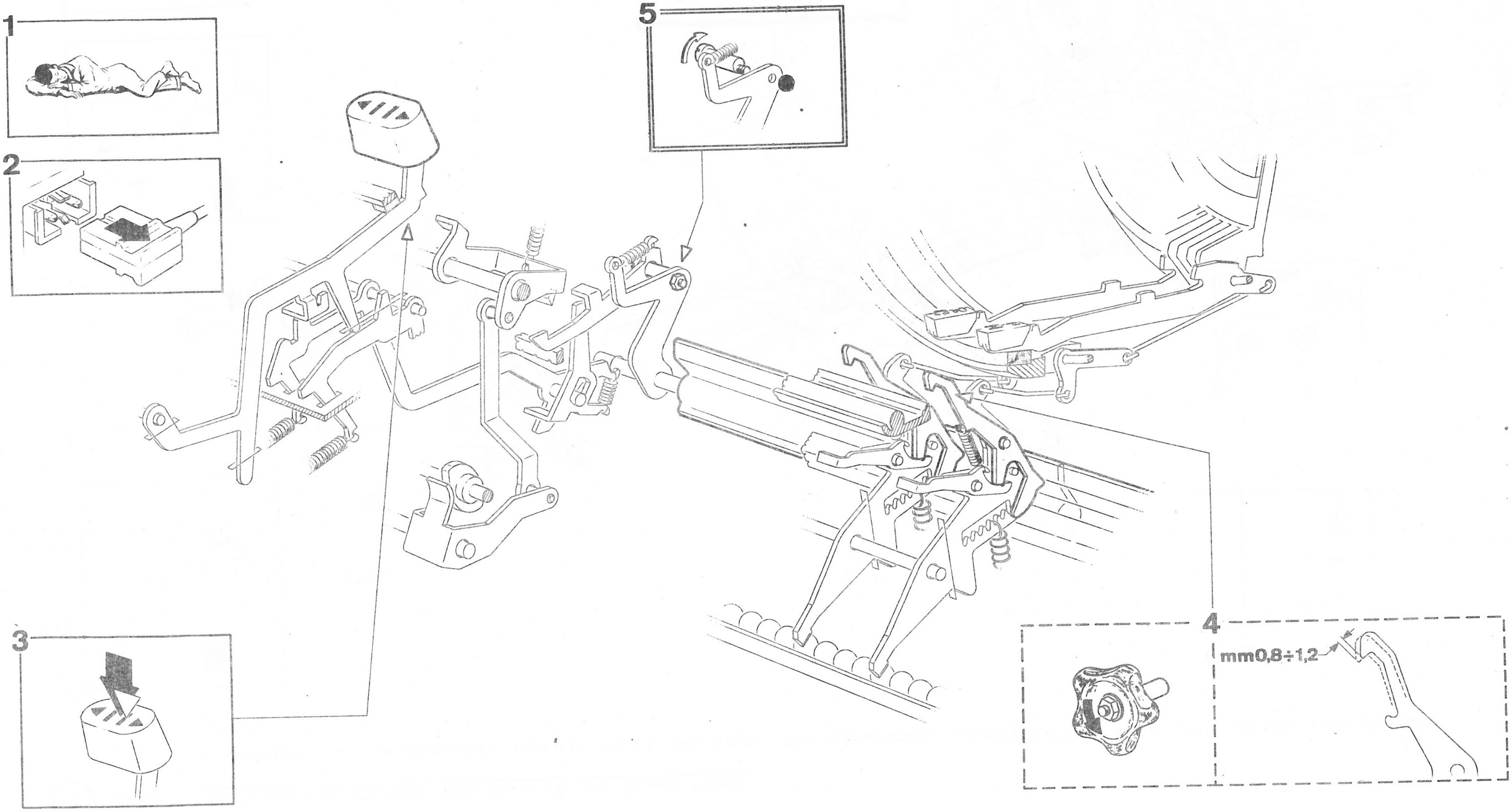
② C-22 Checking the Angular Position of the Reset Frame

Following the simultaneous depression of two keys, the clearance illustrated on page C-15 (lower panel) must exist.


3
SHIFT
4
5
mm0,4
2
LOCK
SHIFT
1
6
+
–

C-21 ③ Checking the Quantity of Reset

By depressing the Keyboard Release Key the condition illustrated on page C-18 (panel 6-7) must take place.



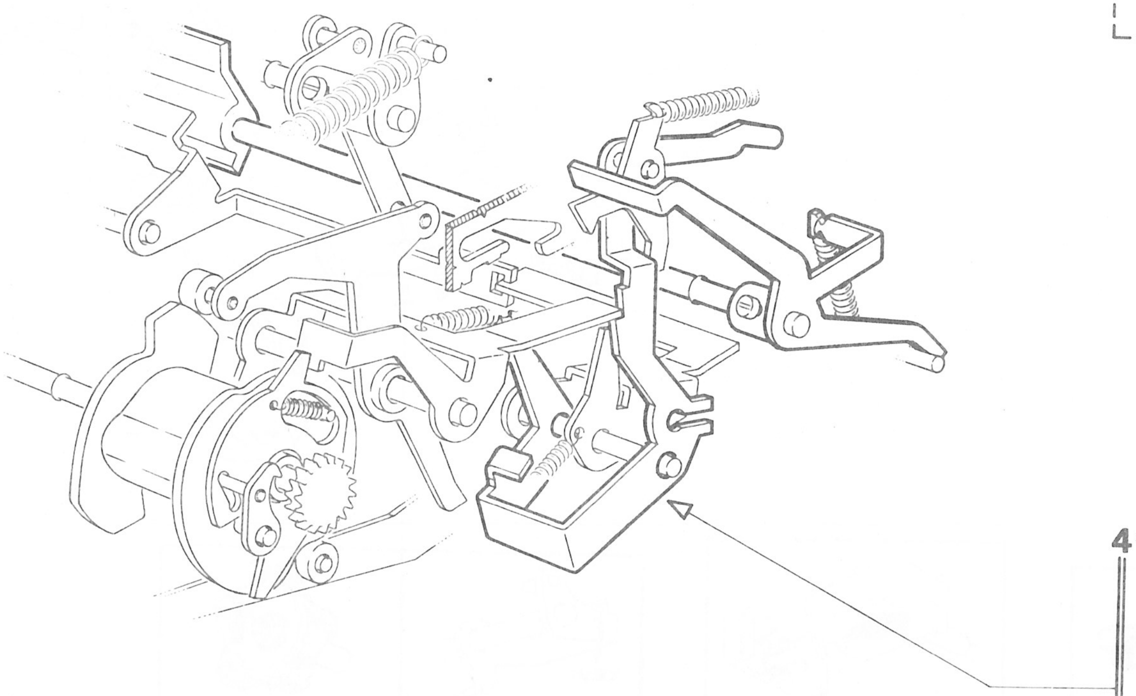
C-20 ④ Checking the Locking of the Print Cam when two keys are depressed simultaneously

When two keys are depressed simultaneously, the clearance illustrated on page C-11 (upper figure) must be realized.

1

3

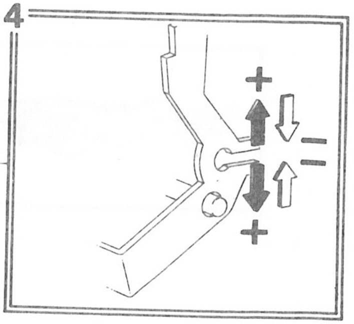
Depress two keys at the same time: Check that the keyboard always deactivates



2

Depress each of the keys (one by one): Check that the keyboard doesn't ever deactivate

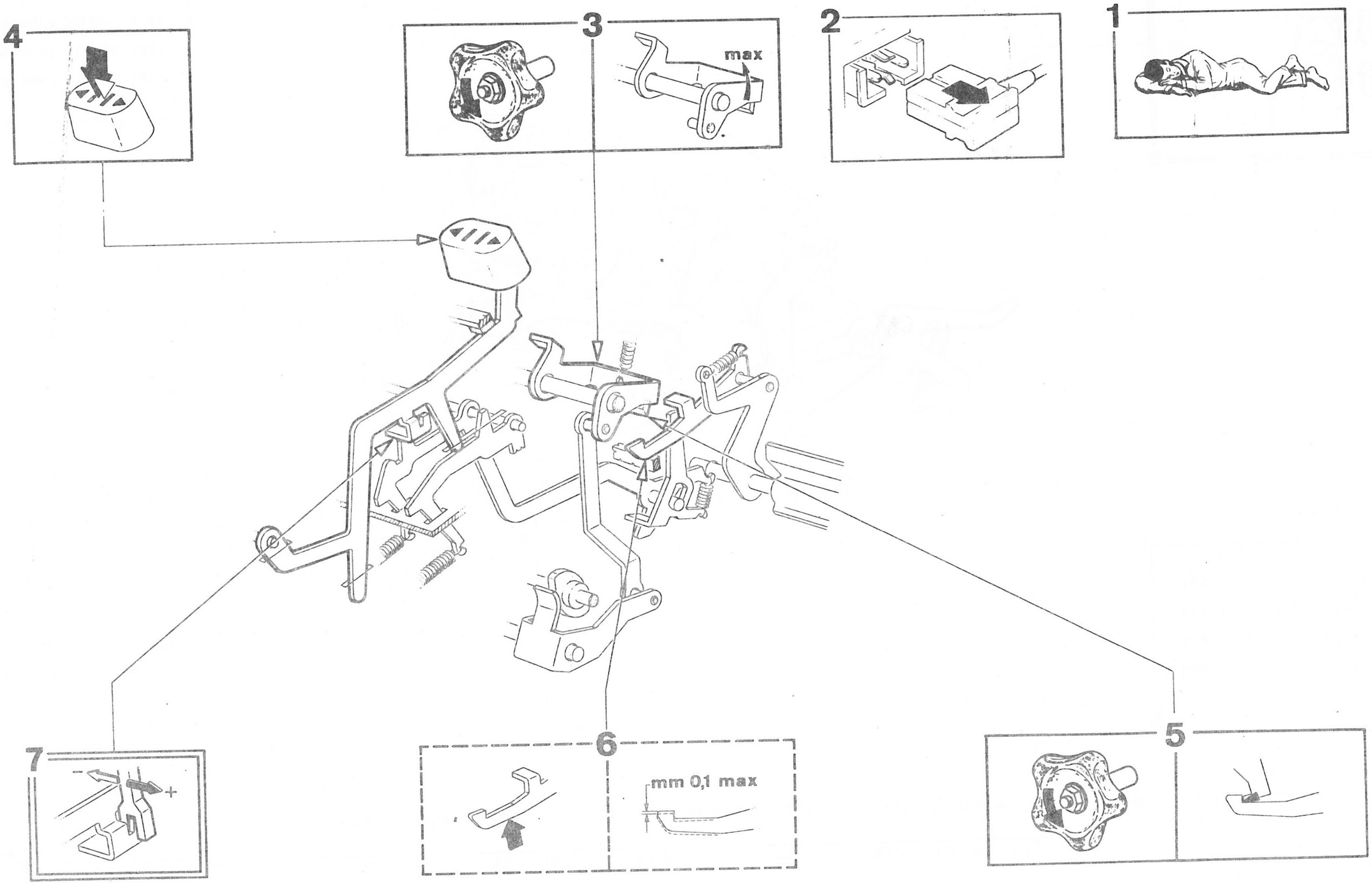
4



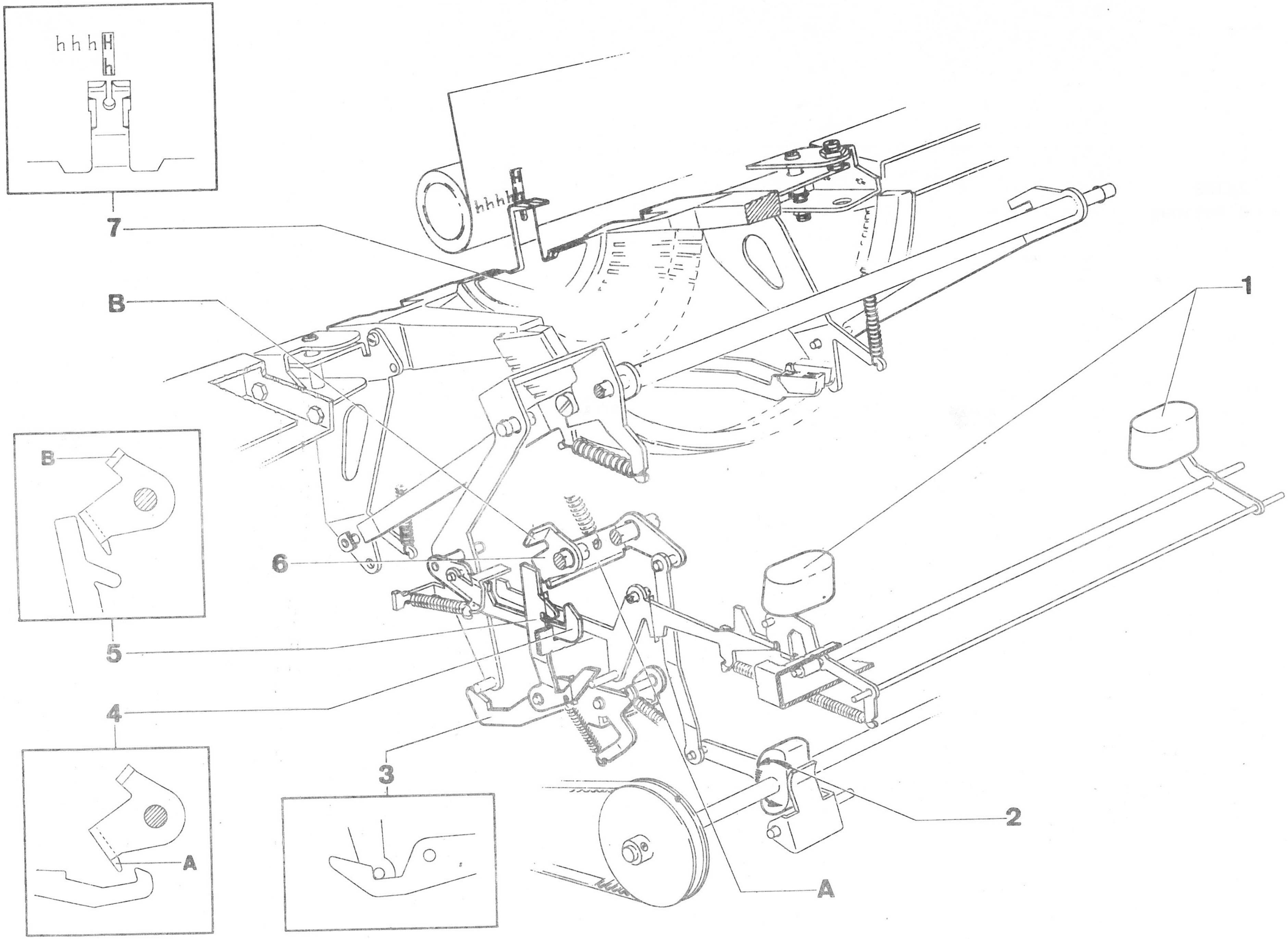
Note - Move toward + if keyboard fails to deactivate when depressing two keys simultaneously; towards - if keyboard deactivates when depressing a single key.

⑤ Checking the Selection of Reset

When depressing the Keyboard Release Key, the condition illustrated on page C-17 (panel 6) must take place.


4
3
max
2
1
7
−
+
6
mm 0,1 max
5

Section D
SHIFT


hhhH
h
7
B
B
6
5
4
A
3
1
2
A

Foreword

Depressing and holding down one of the Shift Keys shifts the Segment down to the Upper Case position (i.e., Capital Letters).

Command Mechanism

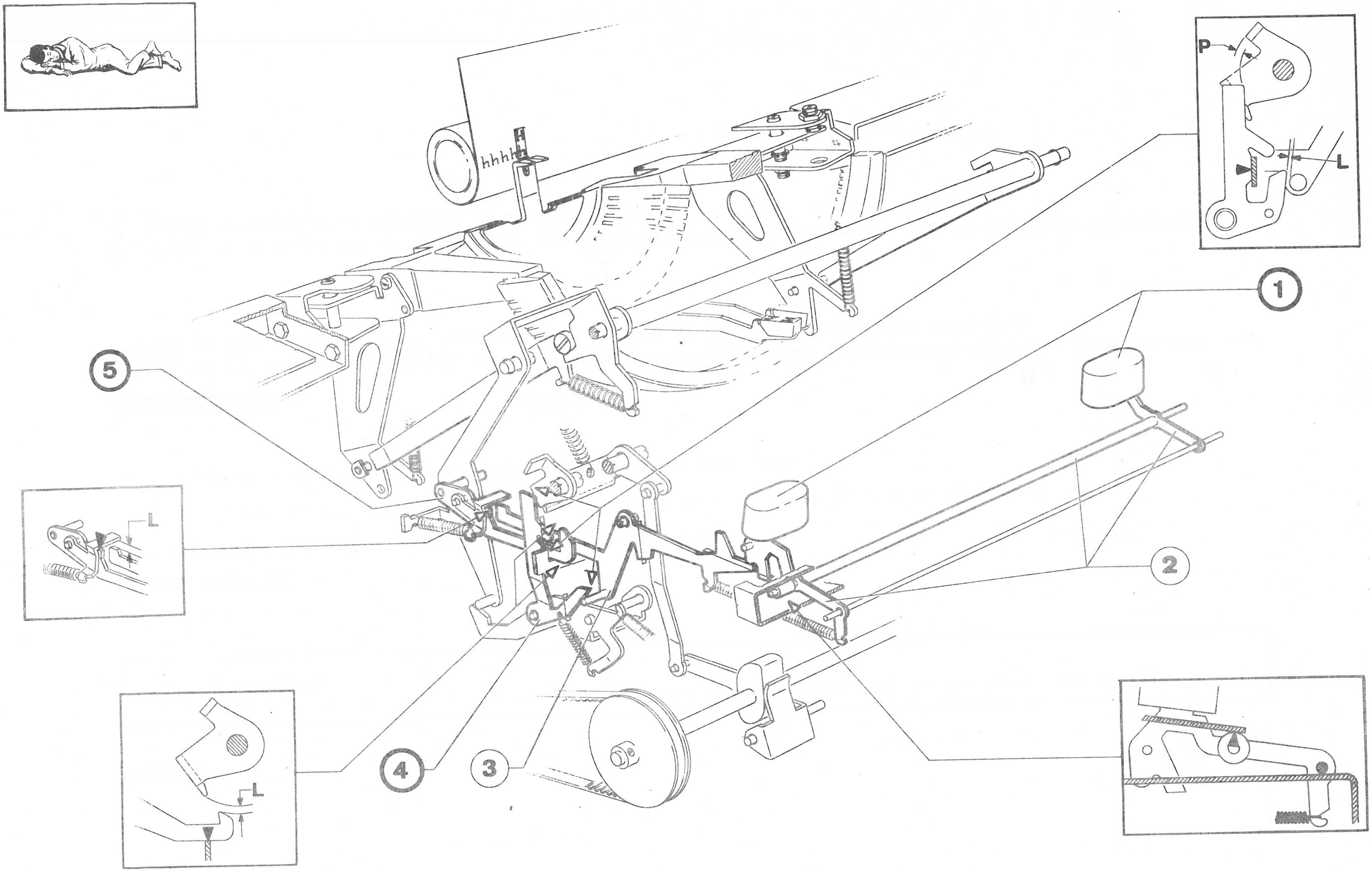
When depressing and holding down one of the Shift Keys (1):

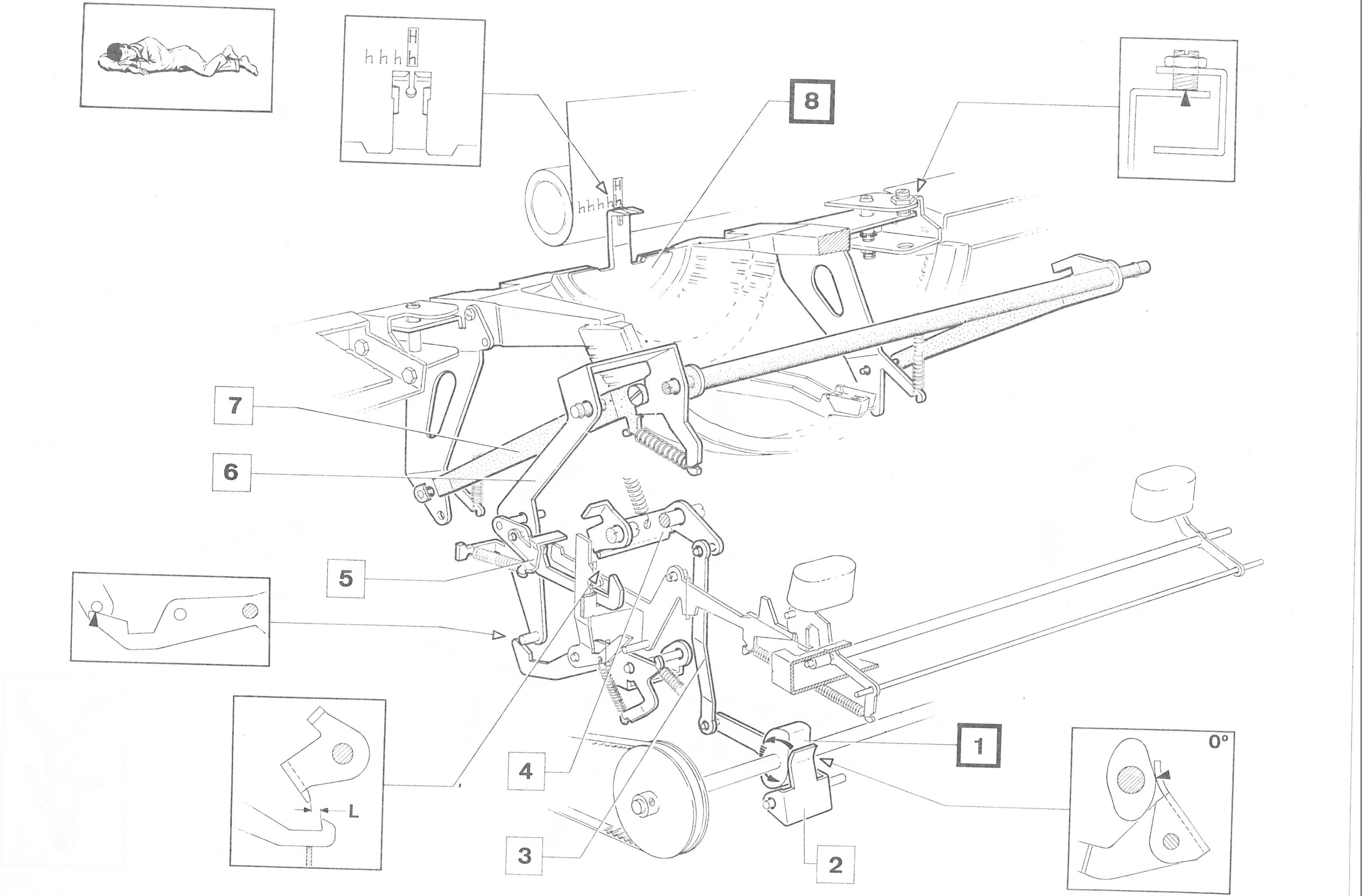
- Pull Link (4) gets in the path of profile (A) of Bail (6) which oscillates constantly
- Plate (5) gets out of the path of extension (B) of Bail (6)*.

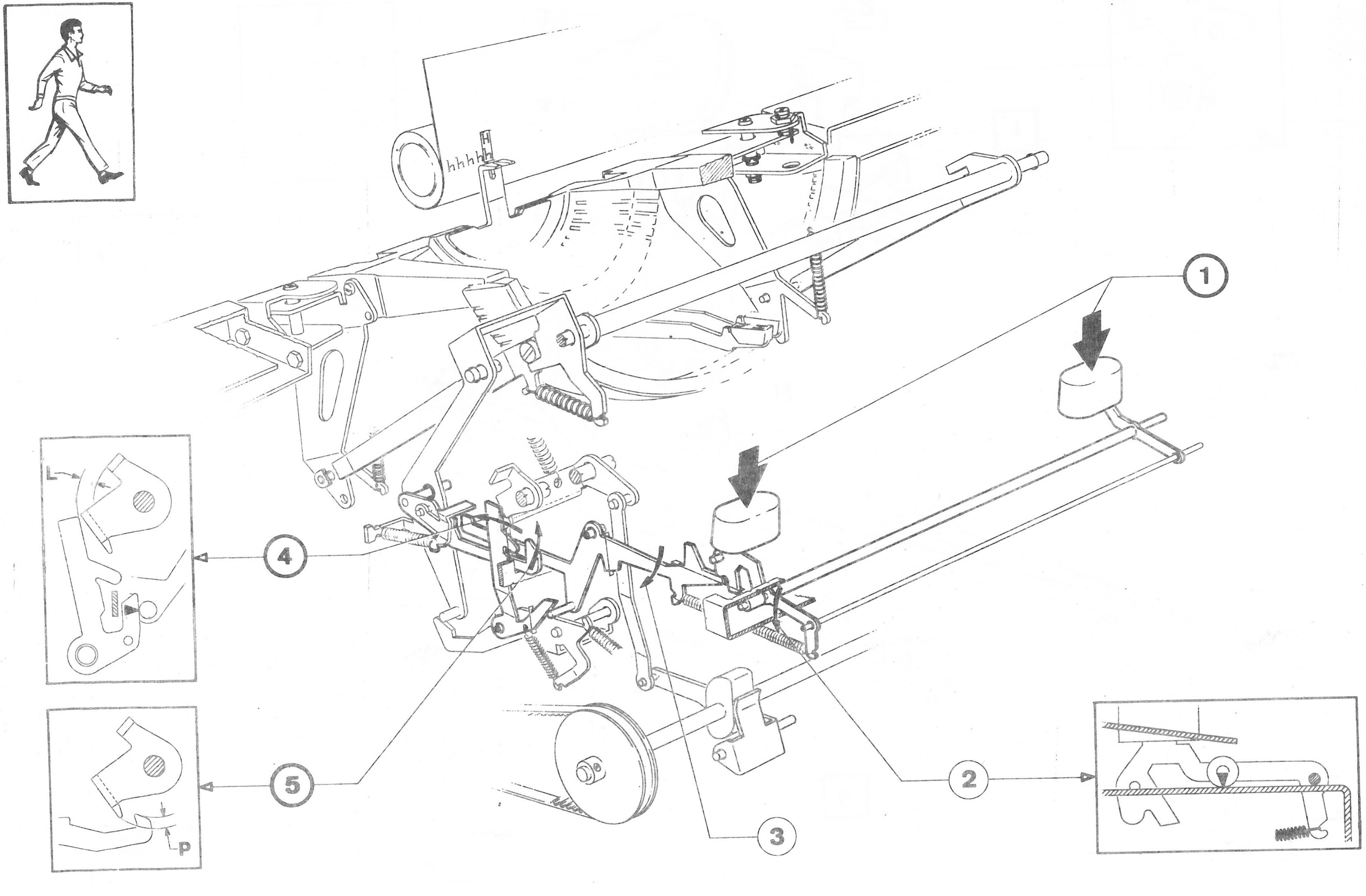
Operation Mechanism

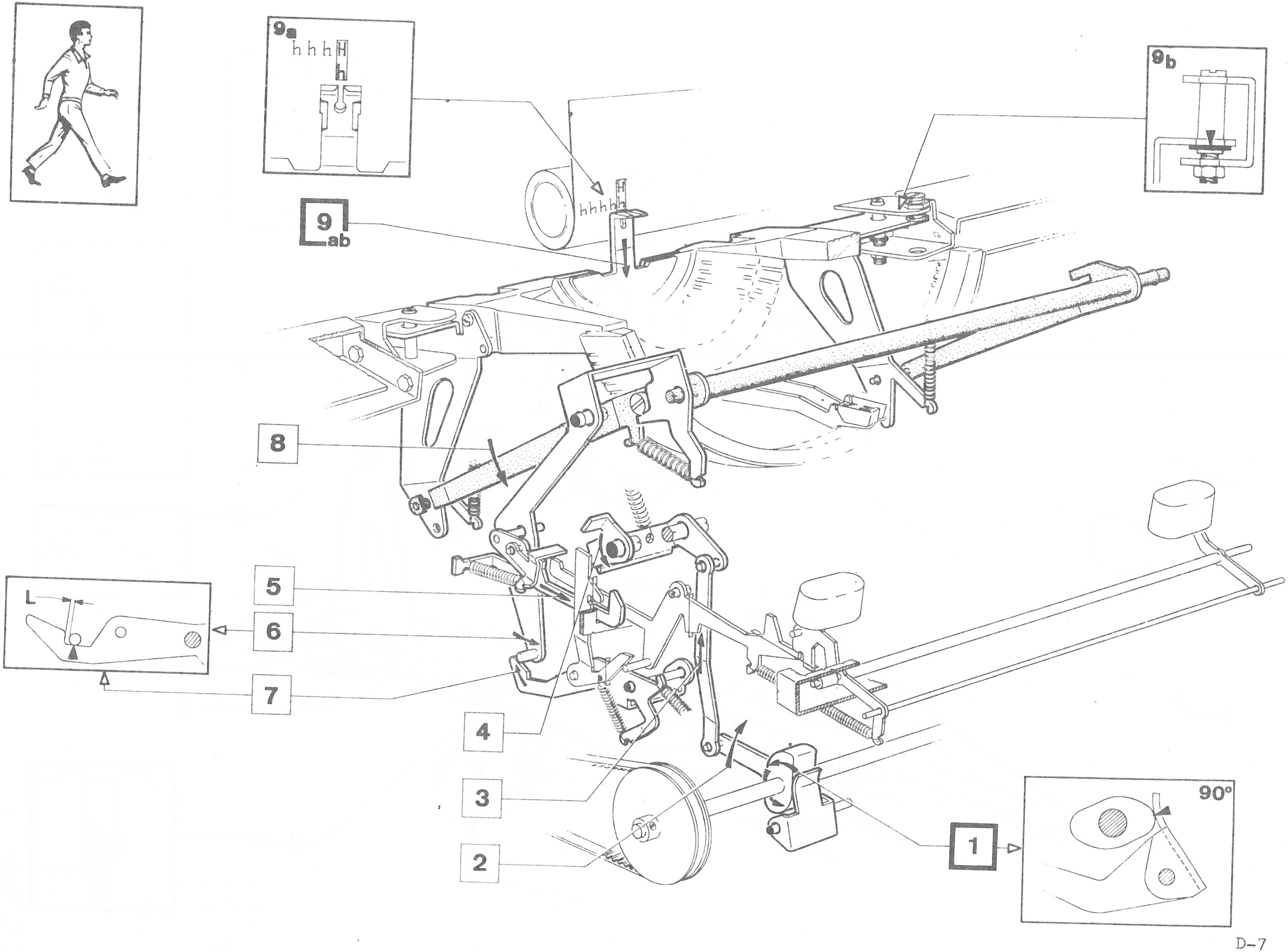
During the 90° rotation of Cam (2), which constantly rotates, Segment (4) shifts to the Upper Case position and remains in that position due to Positioner (3) as long as the Shift Key remains depressed.

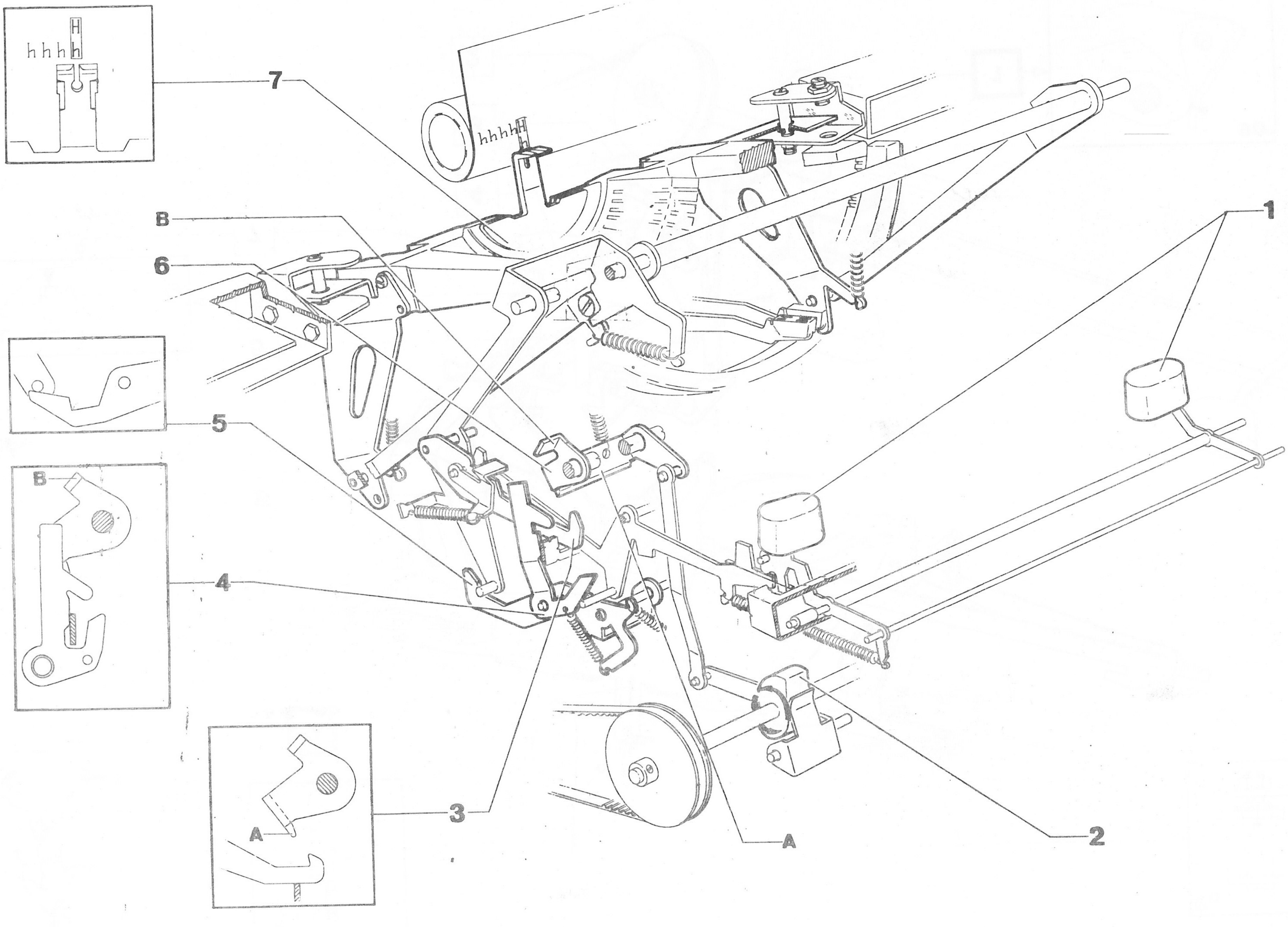
(*) Plate (5) must get out of the path of extension (B) to return the Segment back to the Lower Case position (small letters) as is described on page D-9.


hhhhh
H
P
L
1
5
L
2
4
3
L


H
hhhh h
hhhhh H
L
0°


hhhhh
H
1
2
3
4
5
L
P


9a
h h h H
h
9b
9
ab
h h h h H
8
L
5
6
7
4
3
2
1
90°


hhhhH
7
hhhhH
B
6
1
5
B
4
3
A
A
2

Segment returns to the Lower Case Position

When a shift Key is released, the Segment returns to the Lower Case position (i.e., small letters).

Command Mechanism

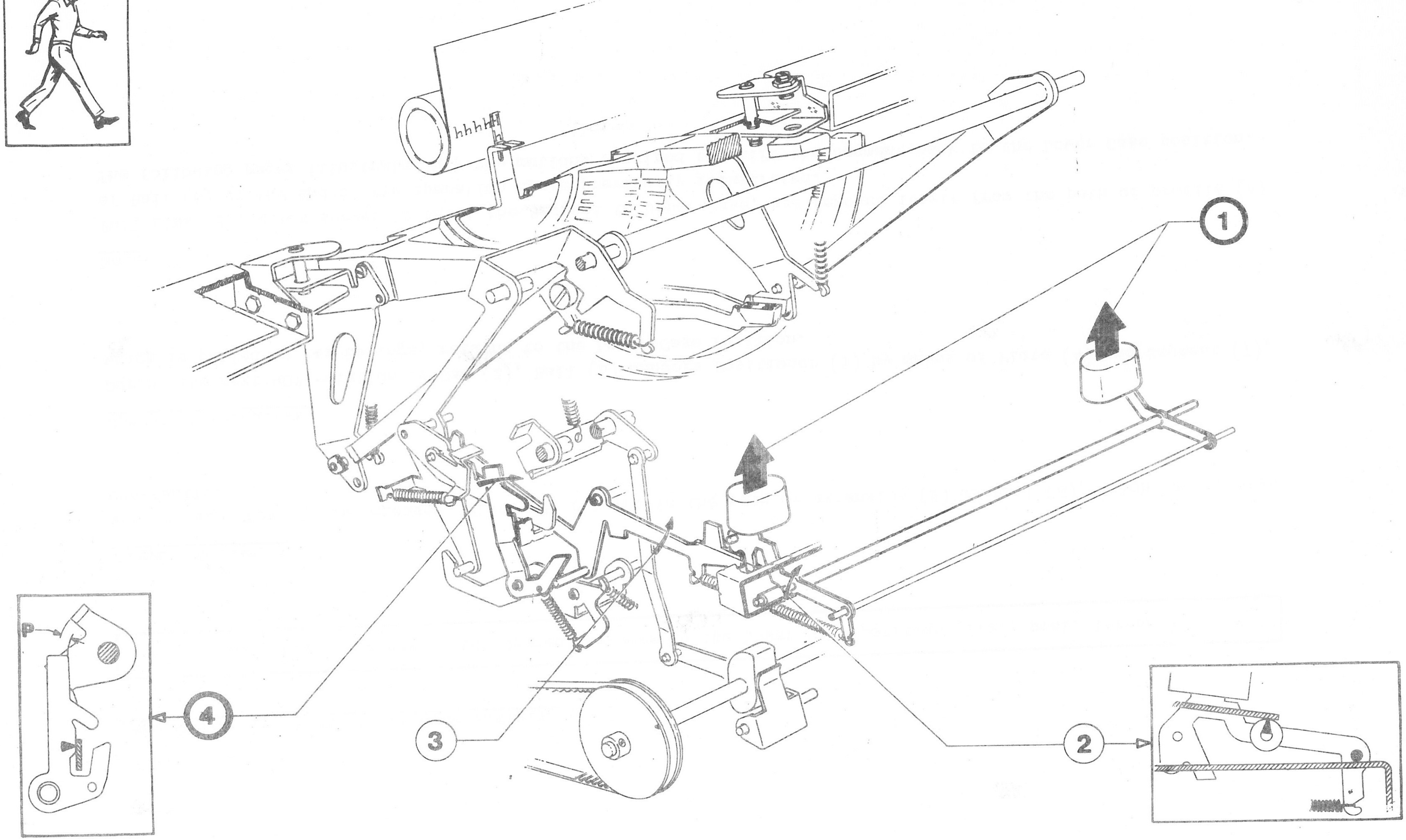
When a shift Key (1) is released, Plate (4) returns in the path of extension (B) of bail (6), which oscillates constantly.

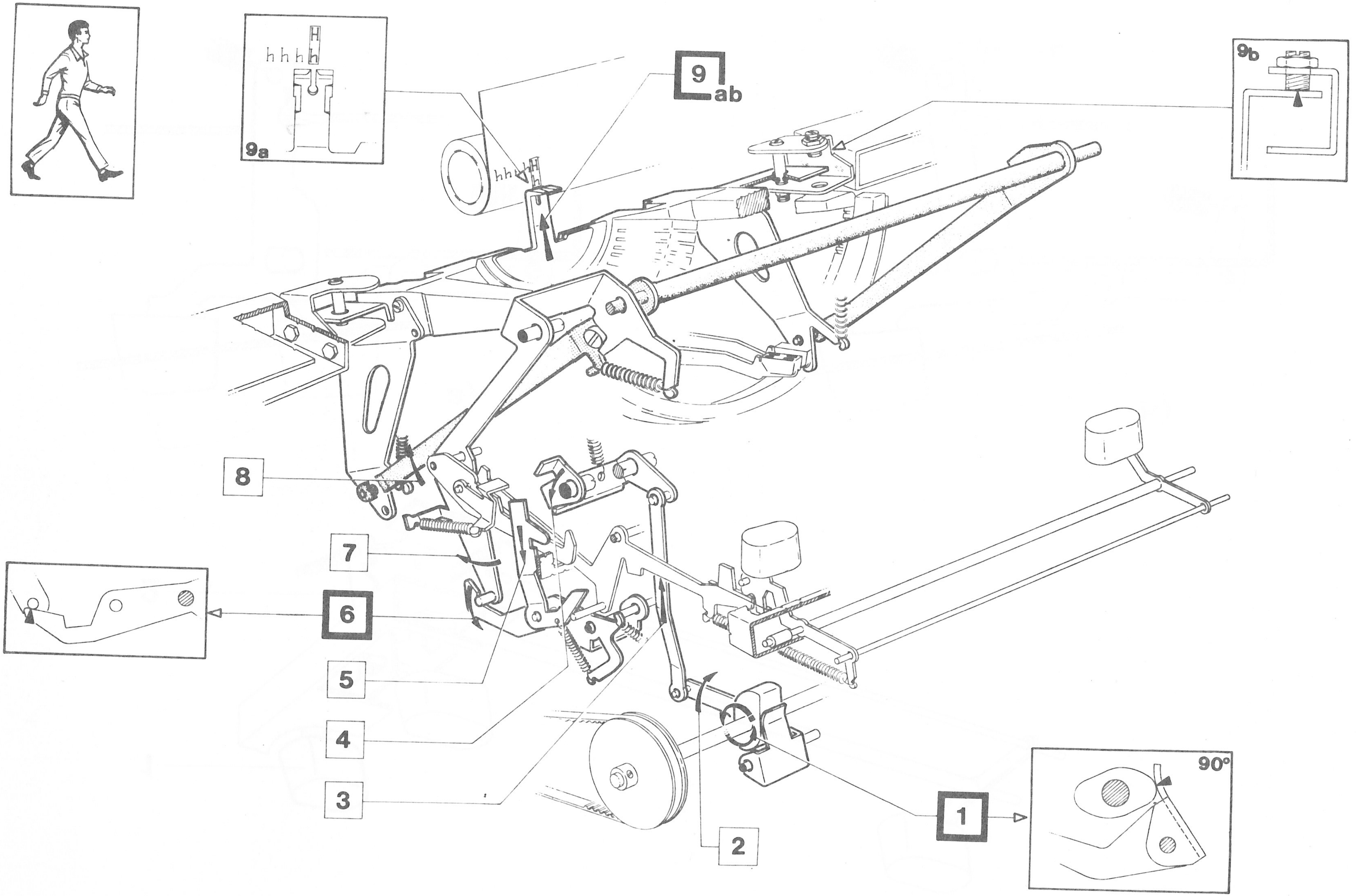
Operation Mechanism

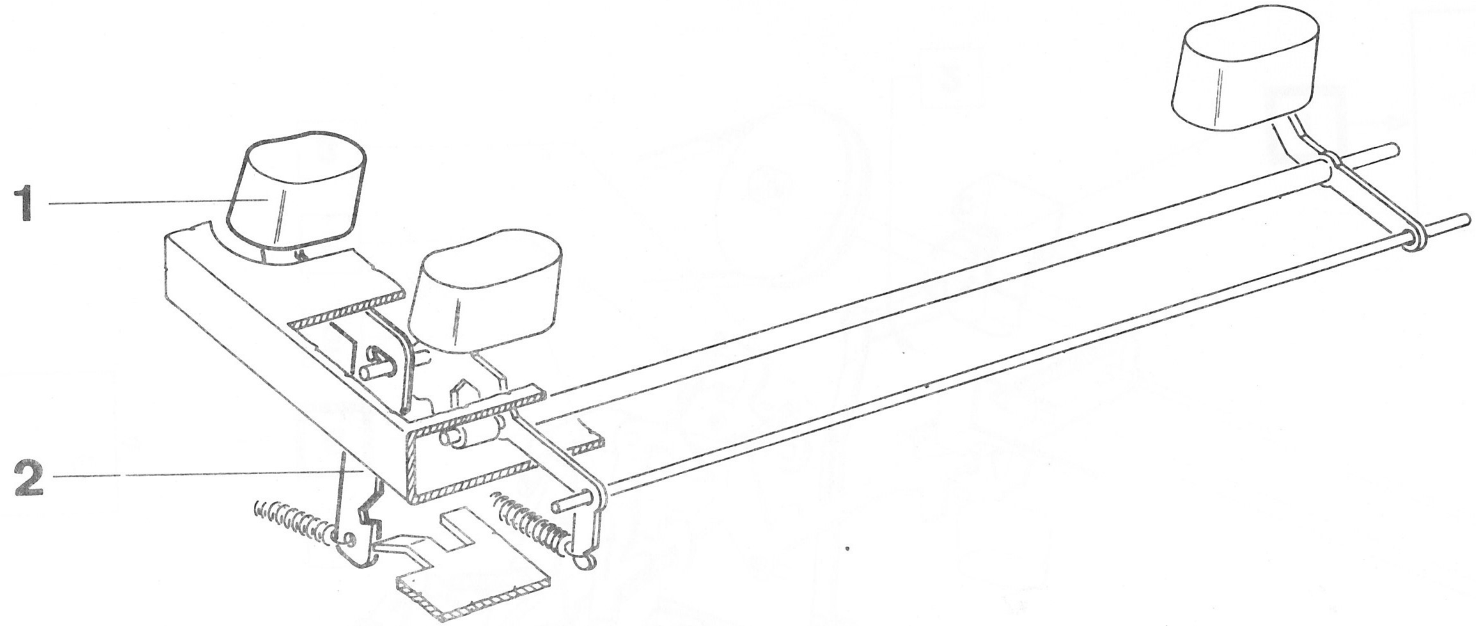
During the next 90° rotation of Cam (2), Bail (6) unhooks Positioner (5) by means of Plate (4) and Segment (7), which is pulled by its Springs, returns to the Lower Case Position.

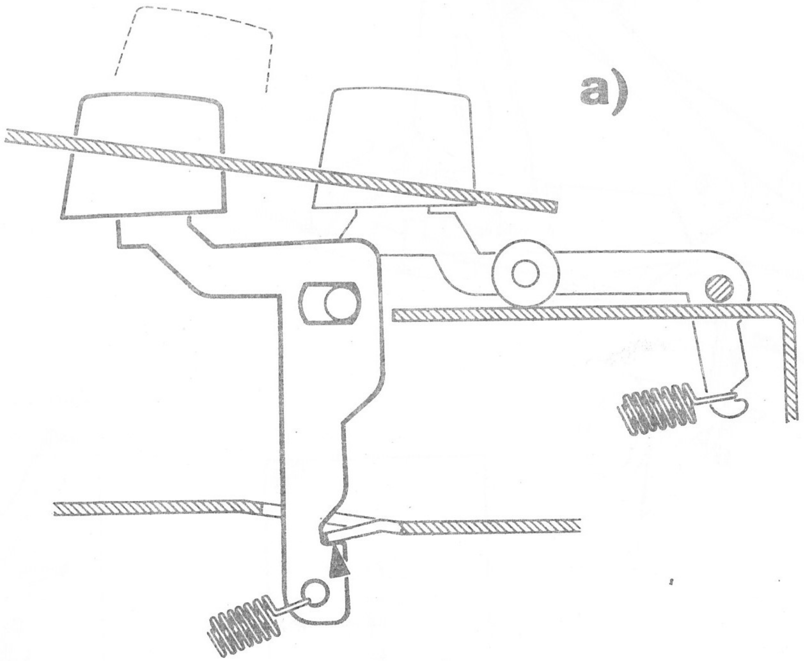
Note

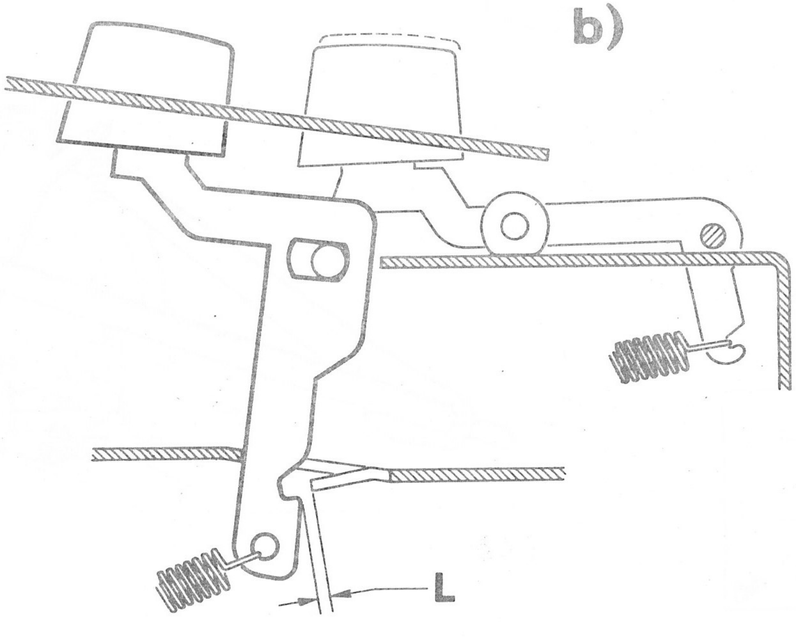
Pull Link (3), which serves to shift the Segment to Upper Case, has removed itself from the path of profile (A) of Bail (6) at the end of the operation cycle previously illustrated.
The following pages illustrate only the motions required to shift the Segment back to the Lower Case position.


hhhhh
P


9a
hhhh
H
h
9 ab
9b
8
7
6
5
4
3
2
1
90°


1
2


a)

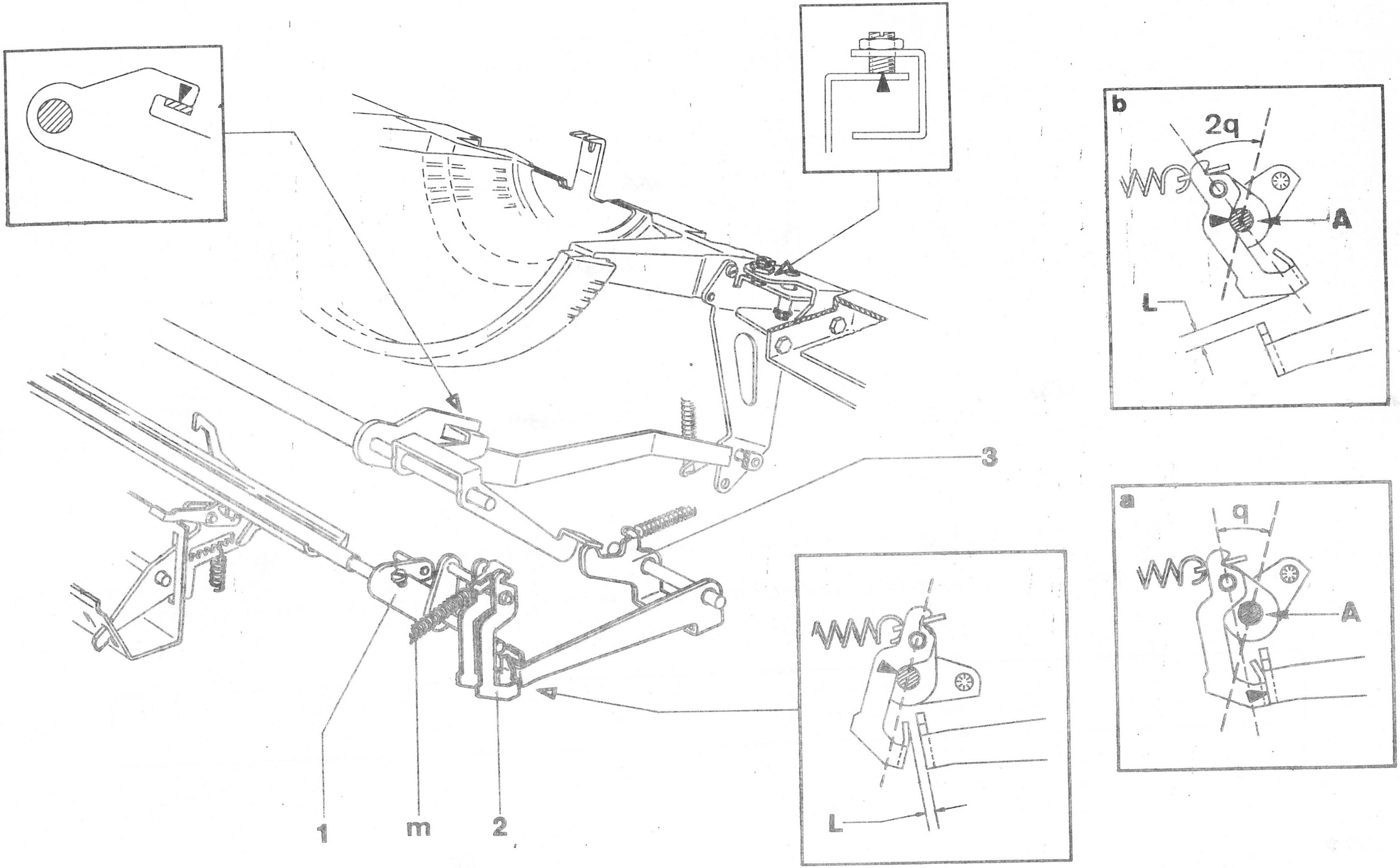

b)
L

Shift Lock

When the Shift Lock Key is depressed, the Shift Keys remain down and the Segment remains in the Upper Case position. To unlock the Shift Lock, one of the Shift Keys must be depressed.

When Key (1) is depressed, its hook (2), hooks on the Keyboard Support, therefore, the Shift Keys remain down (see detail a).

When a Shift Key is depressed, hook (2) becomes unhooked thus releasing the Key itself (see detail b).


b
2q
A
L
3
a
q
A
L
1
m
2

Increased type-bars stroke when the plate is in capital shift position

When the type-bars plate is shifted to capital position, the type-bars stroke is automatically increased. In this way, the increased print surface of the capital letters is compensated so as to obtain an even upper and lower case letters impression.

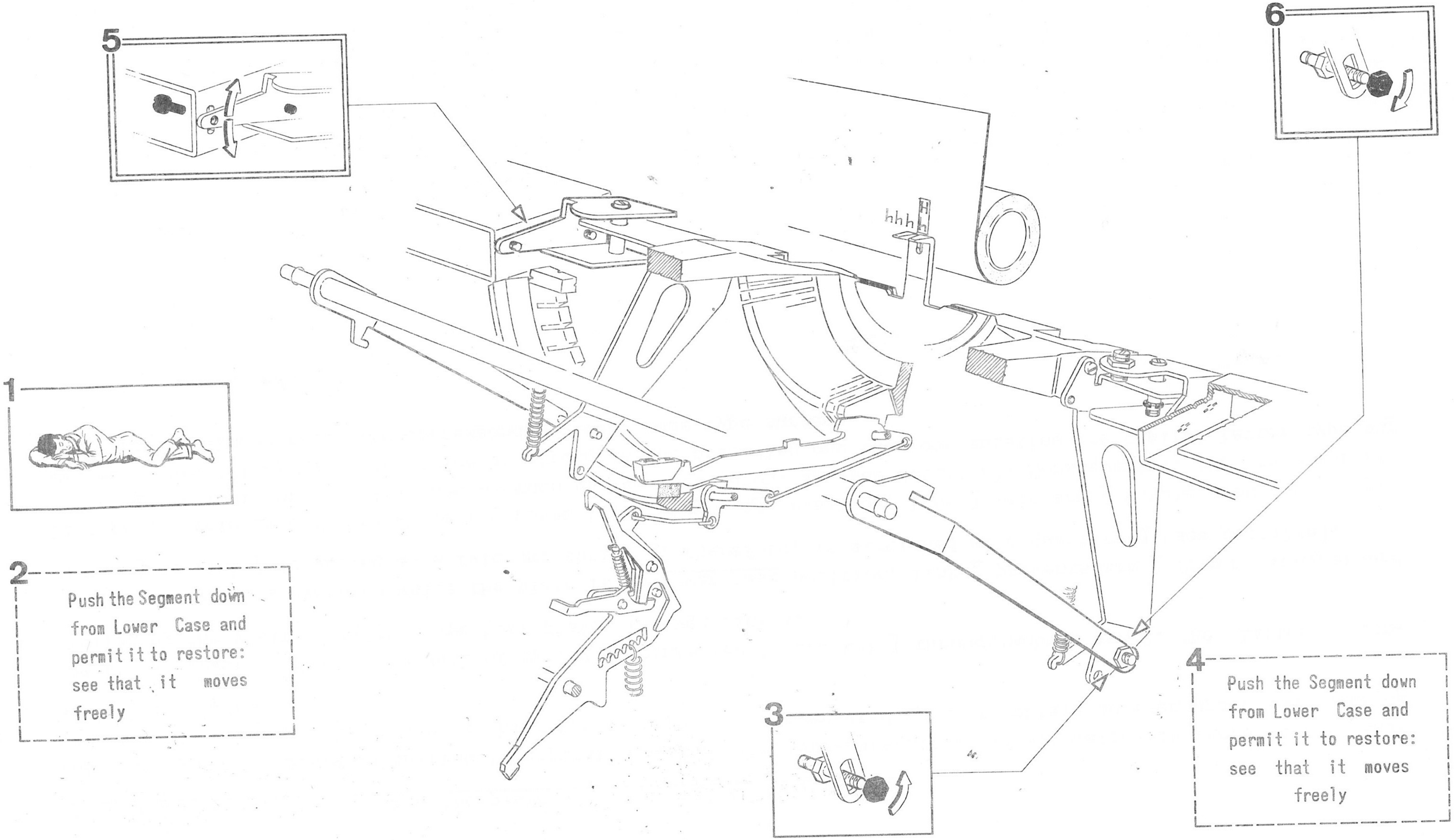
The stroke power is due to the pull of spring m, connected to bracket 1 through mobile arm 2. The latter is controlled by the position of the type-bars plate, through link 3.

If a print cycle is executed while the plate is in lower case position, link 3 prevents arm 2 from rotating around pivot A as link 3 is acting as a fulcrum: spring m, therefore, is stretched of a quantity q (see detail a).

If a print cycle is executed while the plate is in upper case position, link 3 lets arm 2 rotate around pivot A: spring m can therefore be stretched as much as required (about 29, see detail b). Consequently, the type-bar receives a thrust that is almost twice as strong as the preceding one thus compensating the capital letter type surface that is almost twice the corresponding lower case type surface.

① Checking the freeness of the Segment

The Segment must move freely from Lower to Upper Case position and vice-versa.



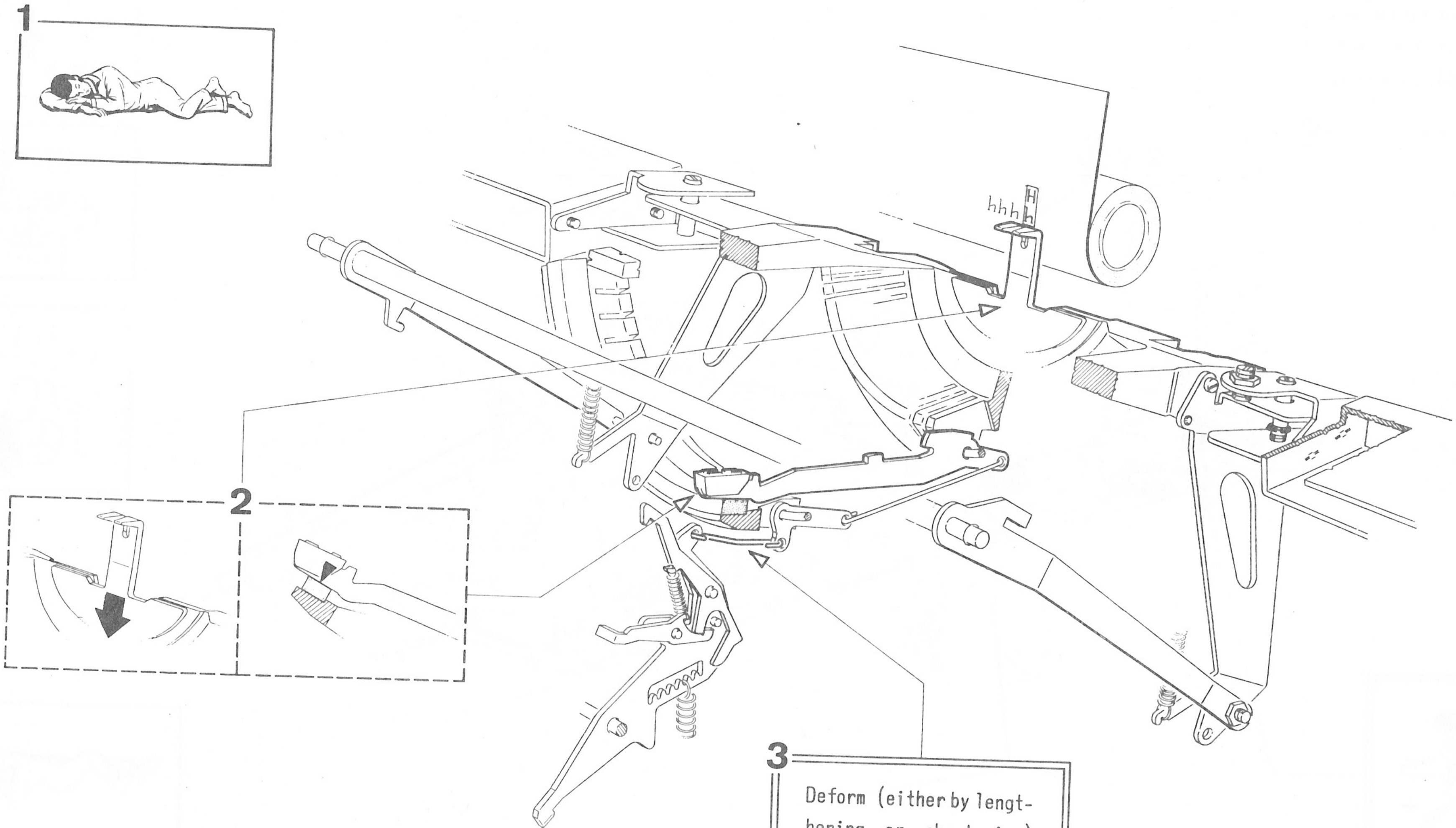
2 Push the Segment down from Lower Case and permit it to restore: see that it moves freely

4 Push the Segment down from Lower Case and permit it to restore: see that it moves freely

Note - Make repair 6 if check 4 goes well; make repairs 5 and 6 in order, if check 4 does not go well.

② Checking the Connection between the Bell Cranks and the Segment

When the Segment is shifted, the Type Bars must always remain in contact with the Type Bar Nest.

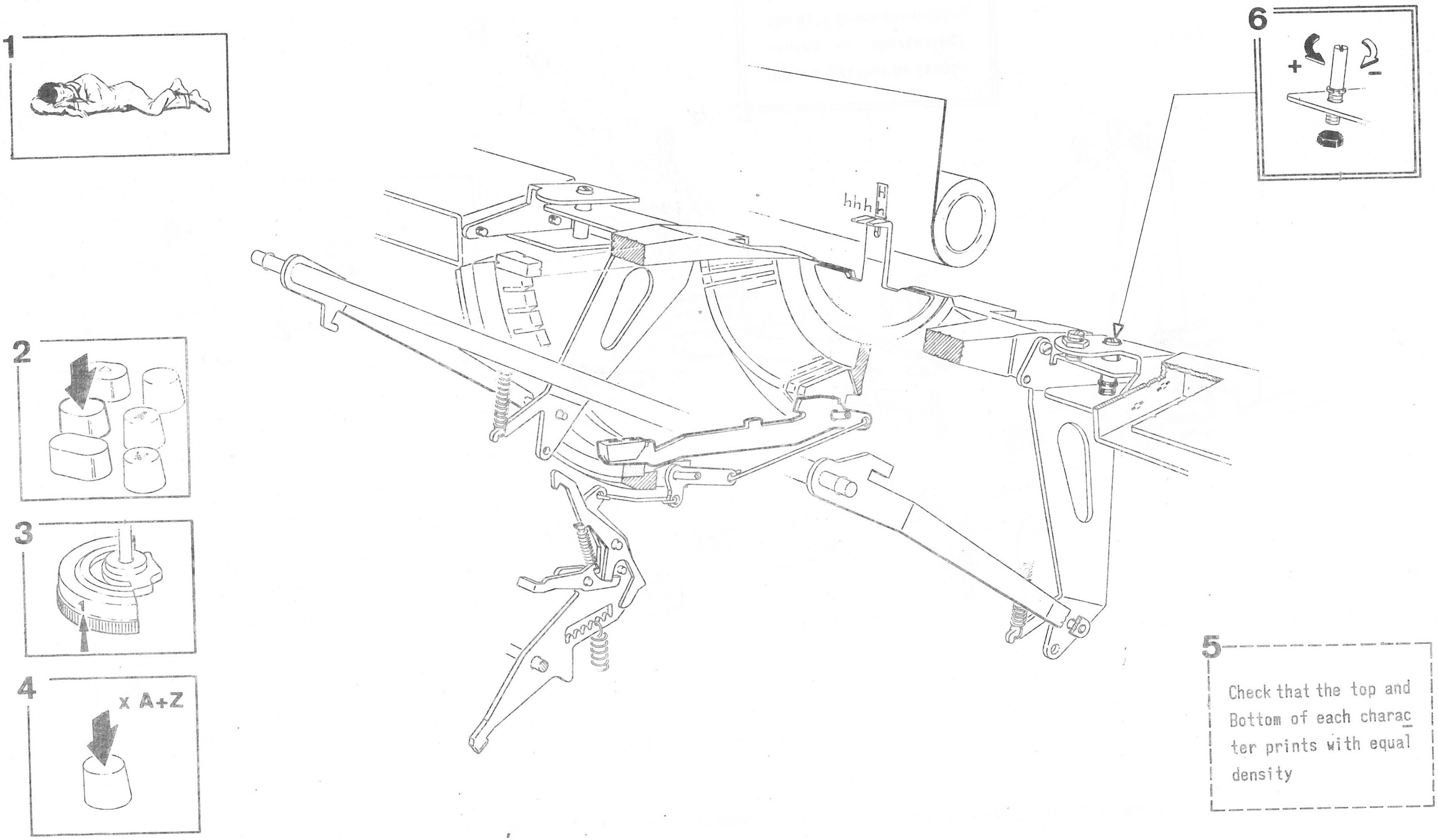


Deform (either by lengthening or shortening) the Bell Crank connecting links

F-13 ③ D-17
D-18

Checking the Type on Feet

The top and bottom of each character must be printed with equal density.

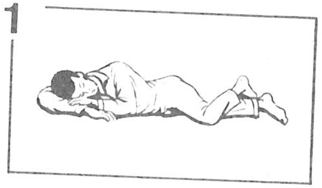


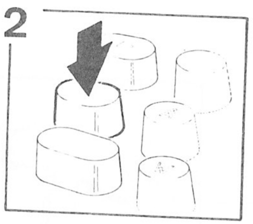
5 Check that the top and Bottom of each charac ter prints with equal density

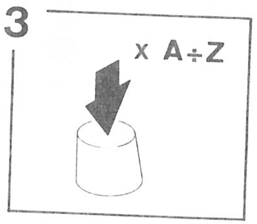
Note - Move towards + if the bottoms of the characters are light; towards - if the tops of the characters are light.

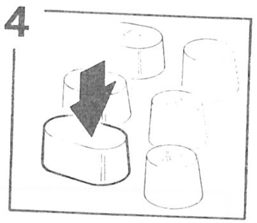
Checking the Alignment between Upper and Lower Cases (Motion - Hh)

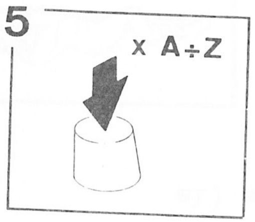
The Upper and Lower Case Characters must always print on the same line.

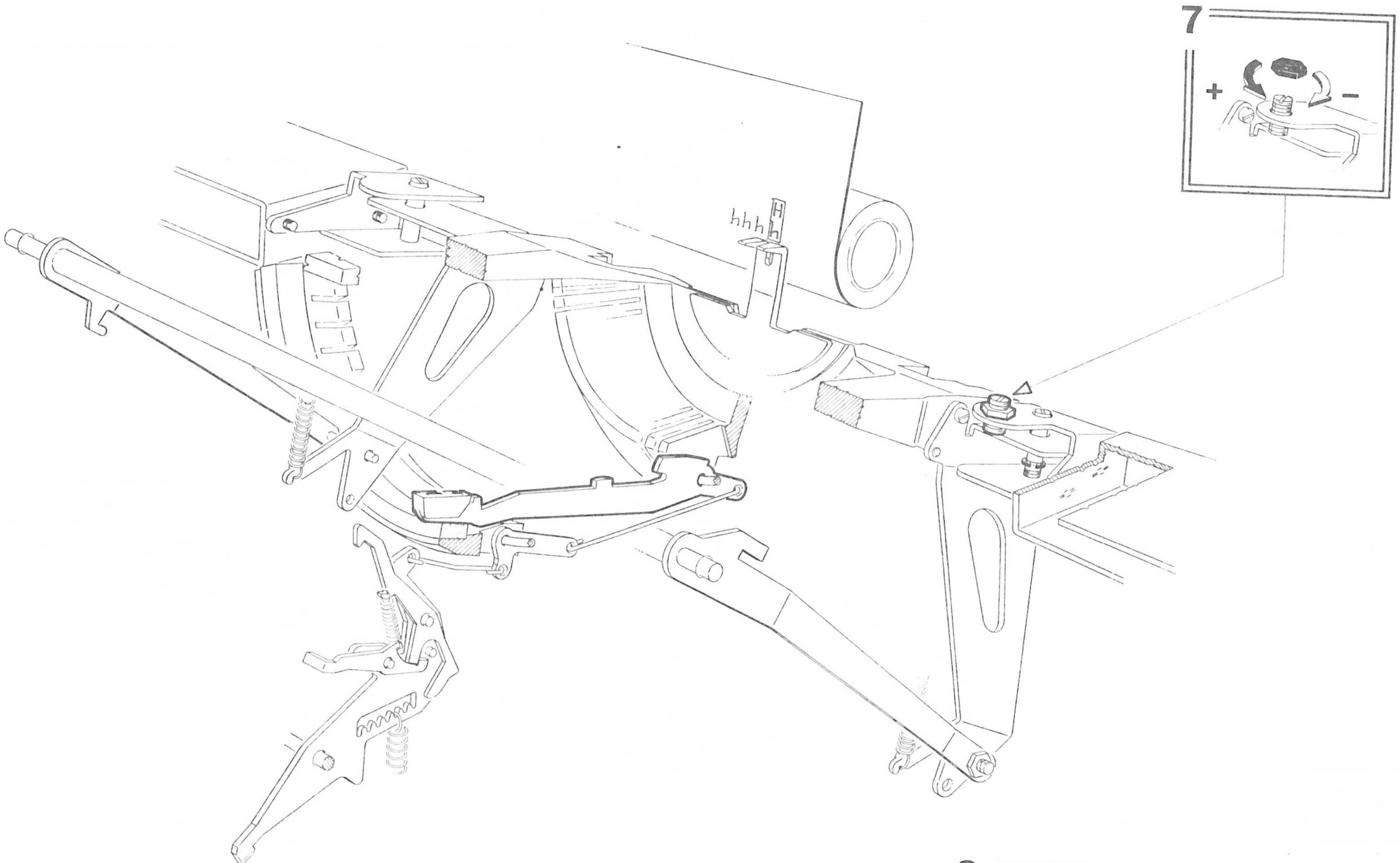












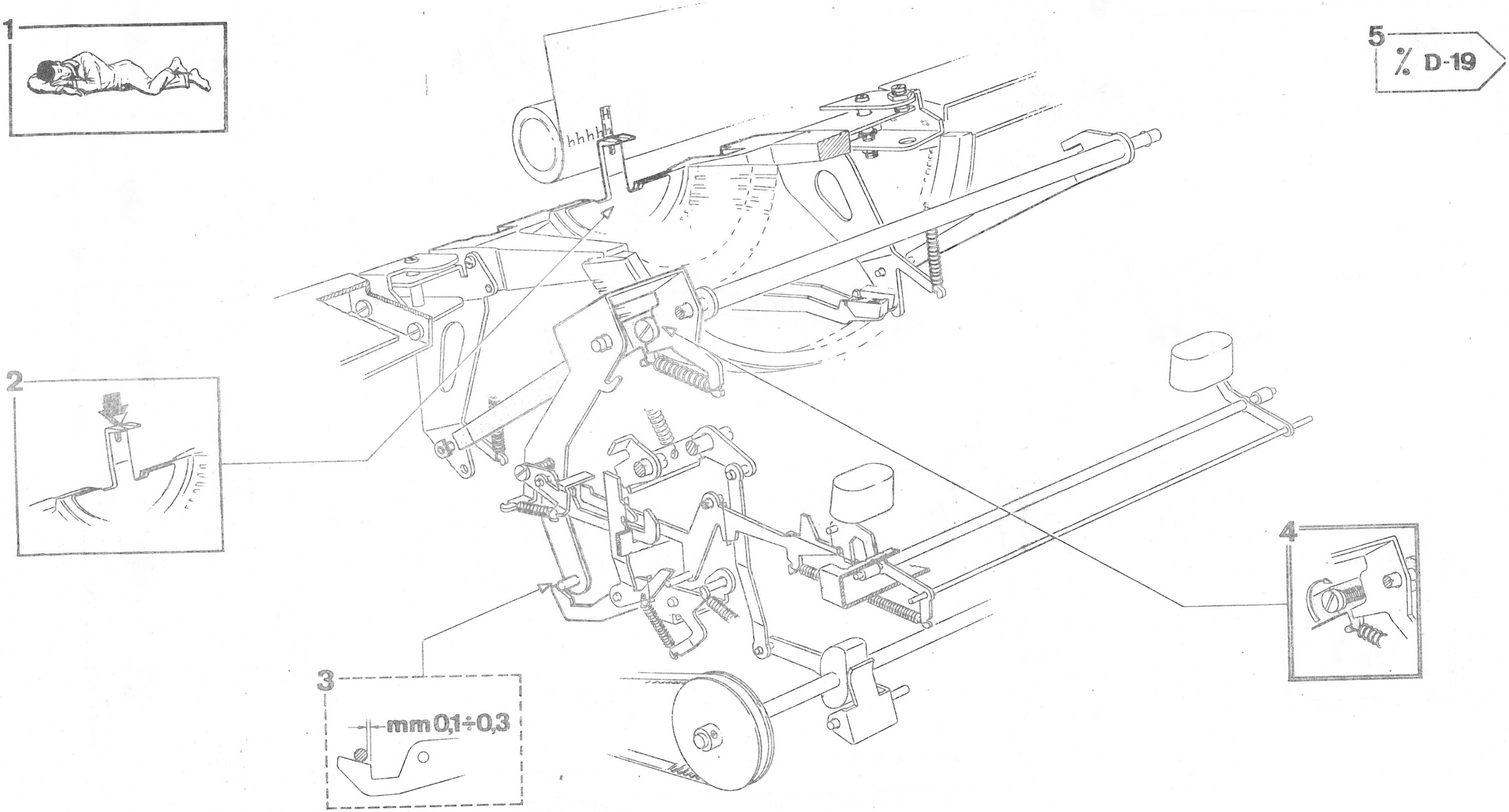
6

dhiyrlv →← IZ49BSRT

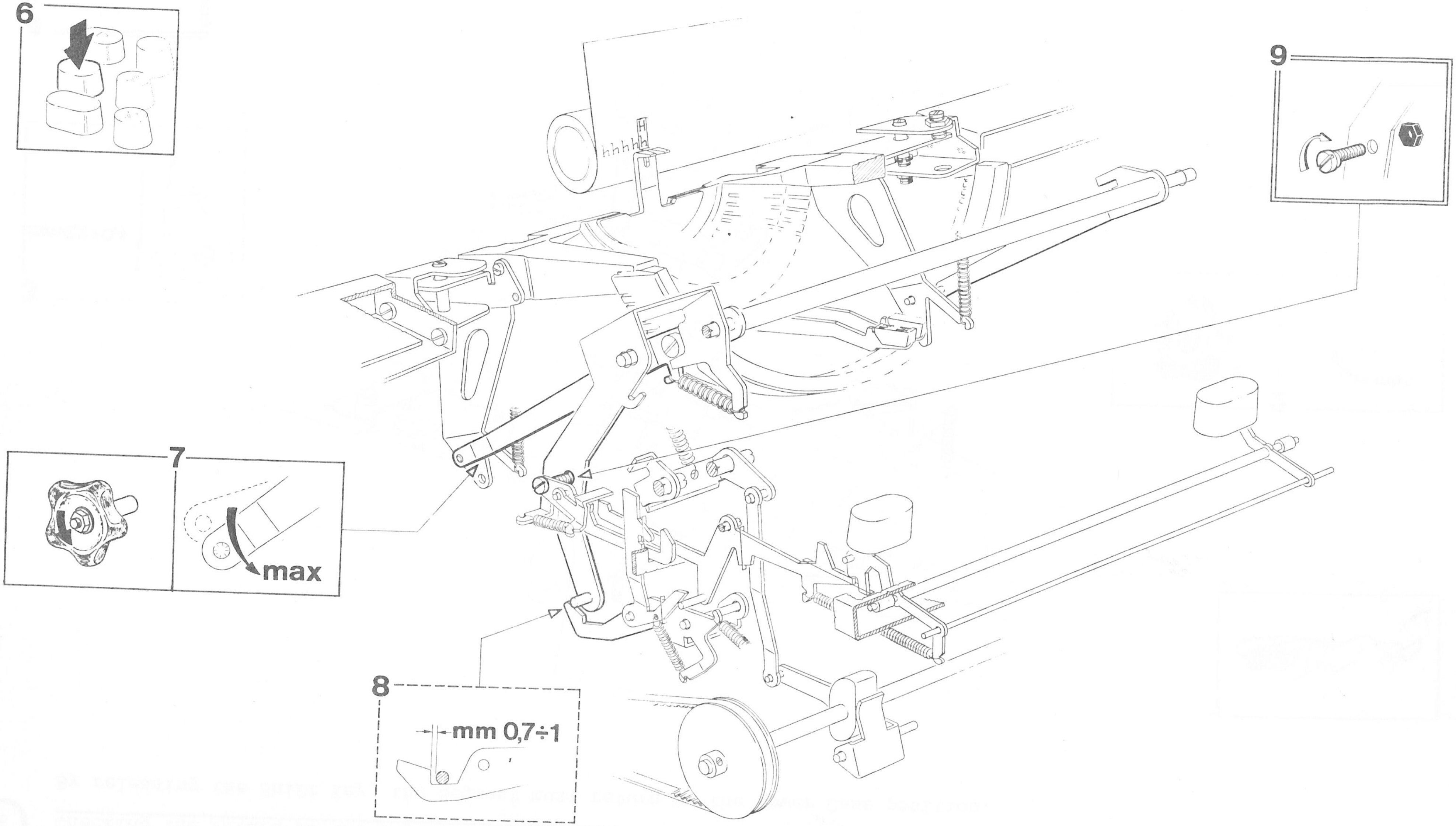
Note - Move towards + if Lower Case characters are lower than Upper Case characters; towards - if they are higher.

D-16 ⑤ Checking the Quantity of Shift Control

Following the depression of a Segment Shift Key, the conditions illustrated on page D-5 (left lower panel) and page D-7 (panel 6) must take place.

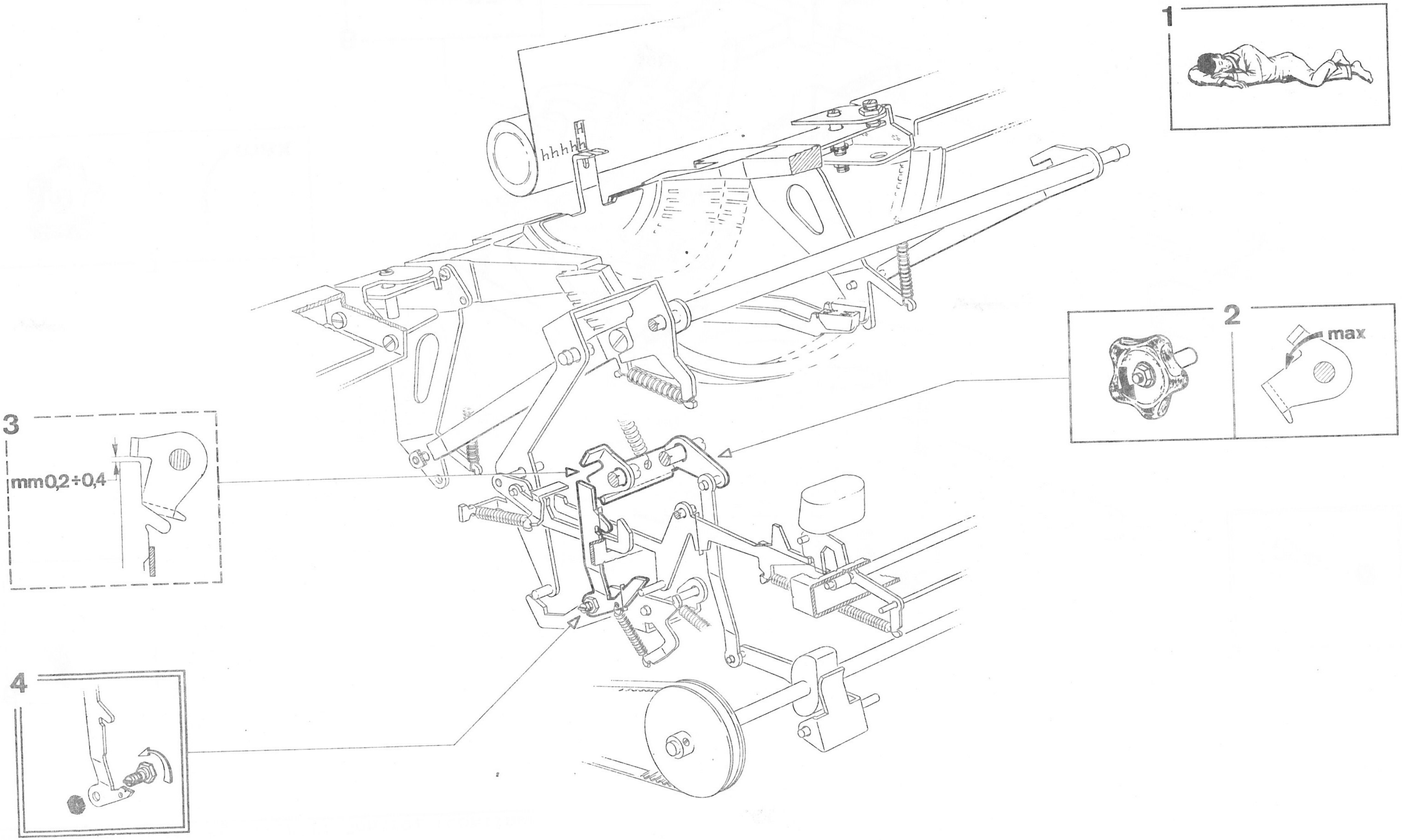

1
5
% D-19
hhhh
2
4
3
mm 0,1÷0,3

Checking the Quantity of Shift Control (continued)


6
hhhhh
9
7
max
8
mm 0,7÷1

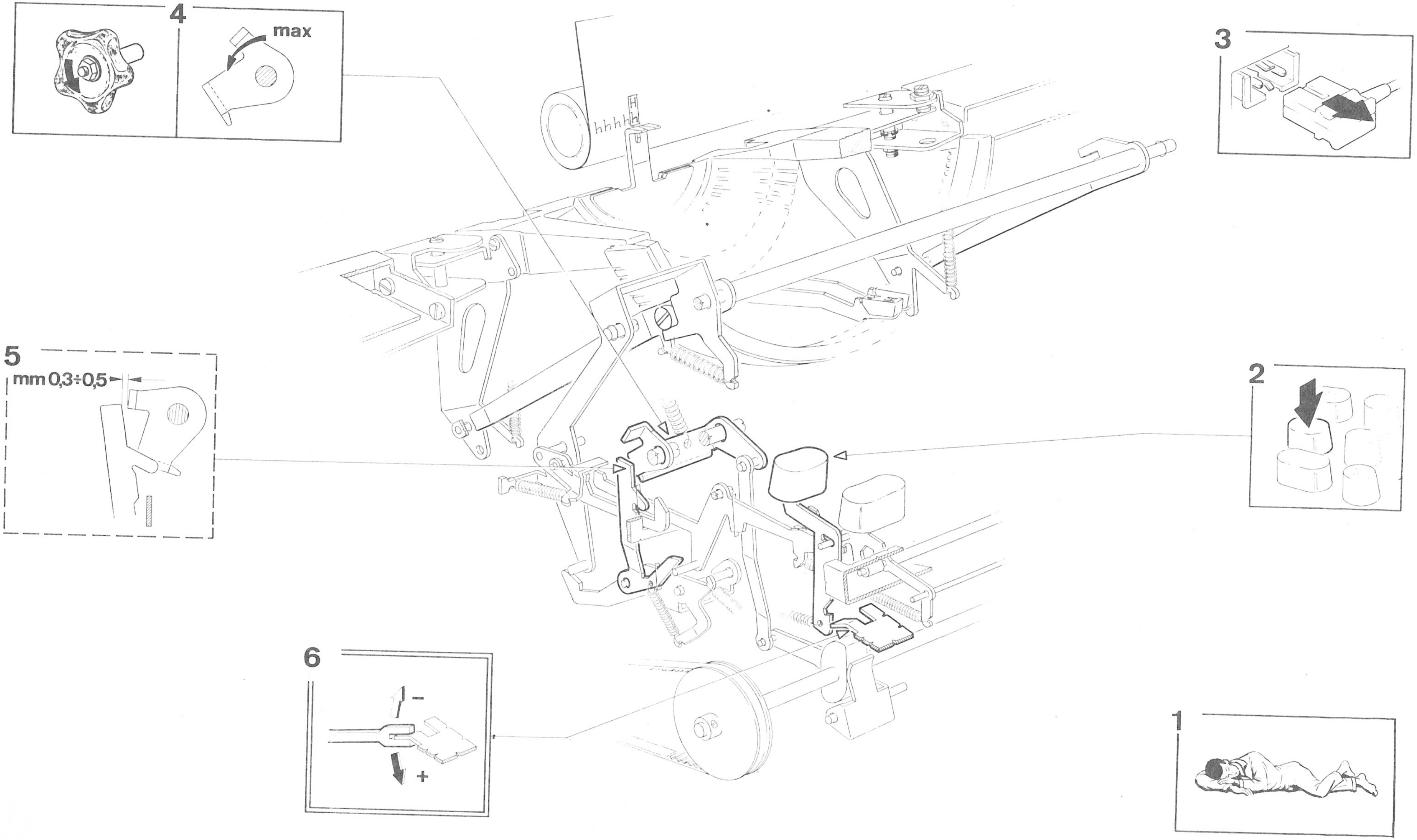
⑥ Checking the return of the Segment to Lower Case

By releasing the Shift Key, the Segment must return to the Lower Case position.


hhhhh
1
2
max
3
mm0,2÷0,4
4

⑦ Checking the Shift Lock

By depressing the Shift Lock Key, the latter must remain depressed. By depressing a Shift key the Shift Lock Key must return upward to its rest position.



Section E
RIBBON MECHANISMS

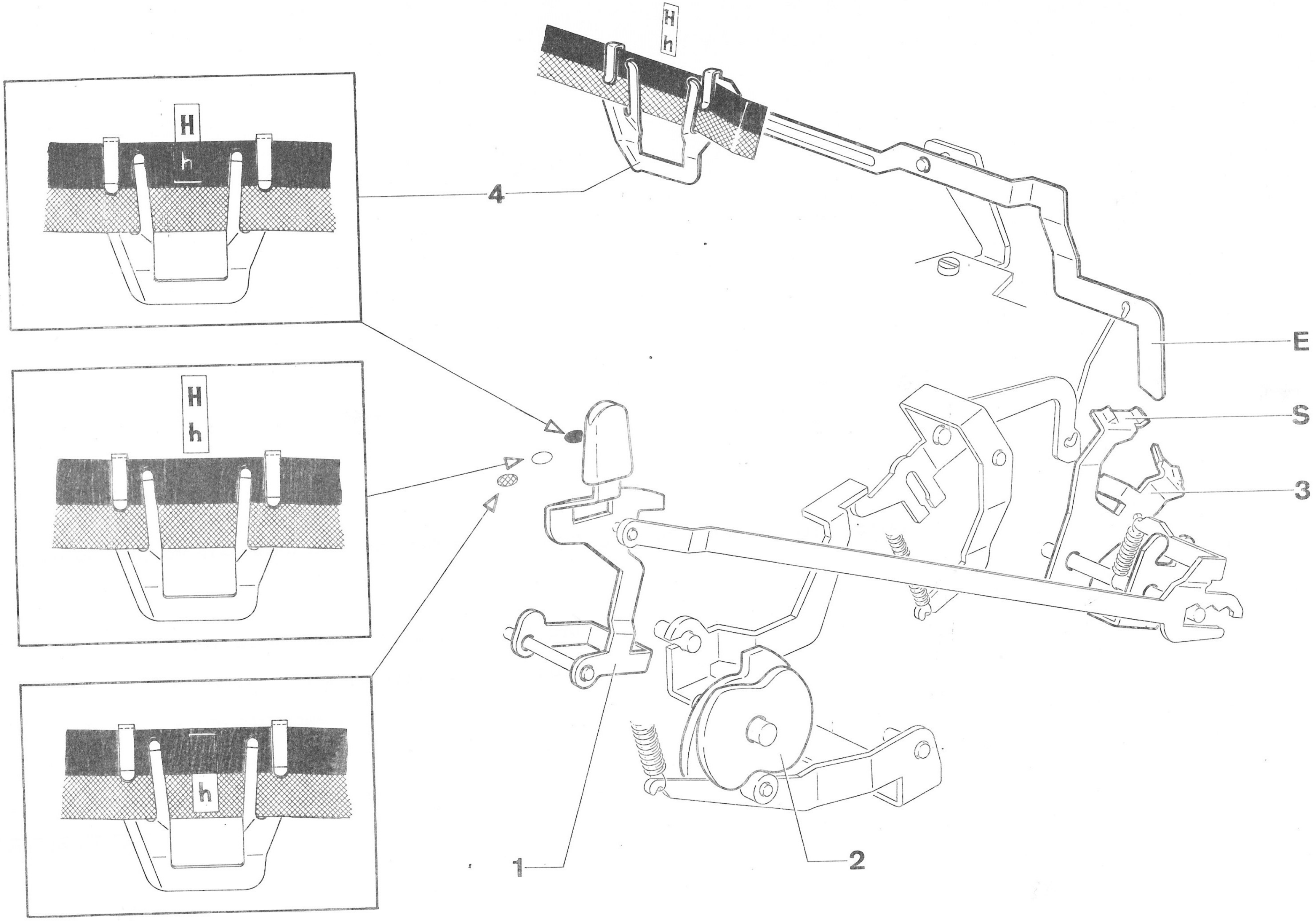
Ribbon Mechanisms

The Ribbon Mechanisms are as follows:

- the mechanism to raise the Ribbon
- the Bichrome Mechanism
- the mechanism to advance the Ribbon
- the mechanism to reverse the Ribbon

Note

The Ribbon Mechanisms are shown with the segment in Lower Case position (small letters).


H
h
4
E
S
3
1
2

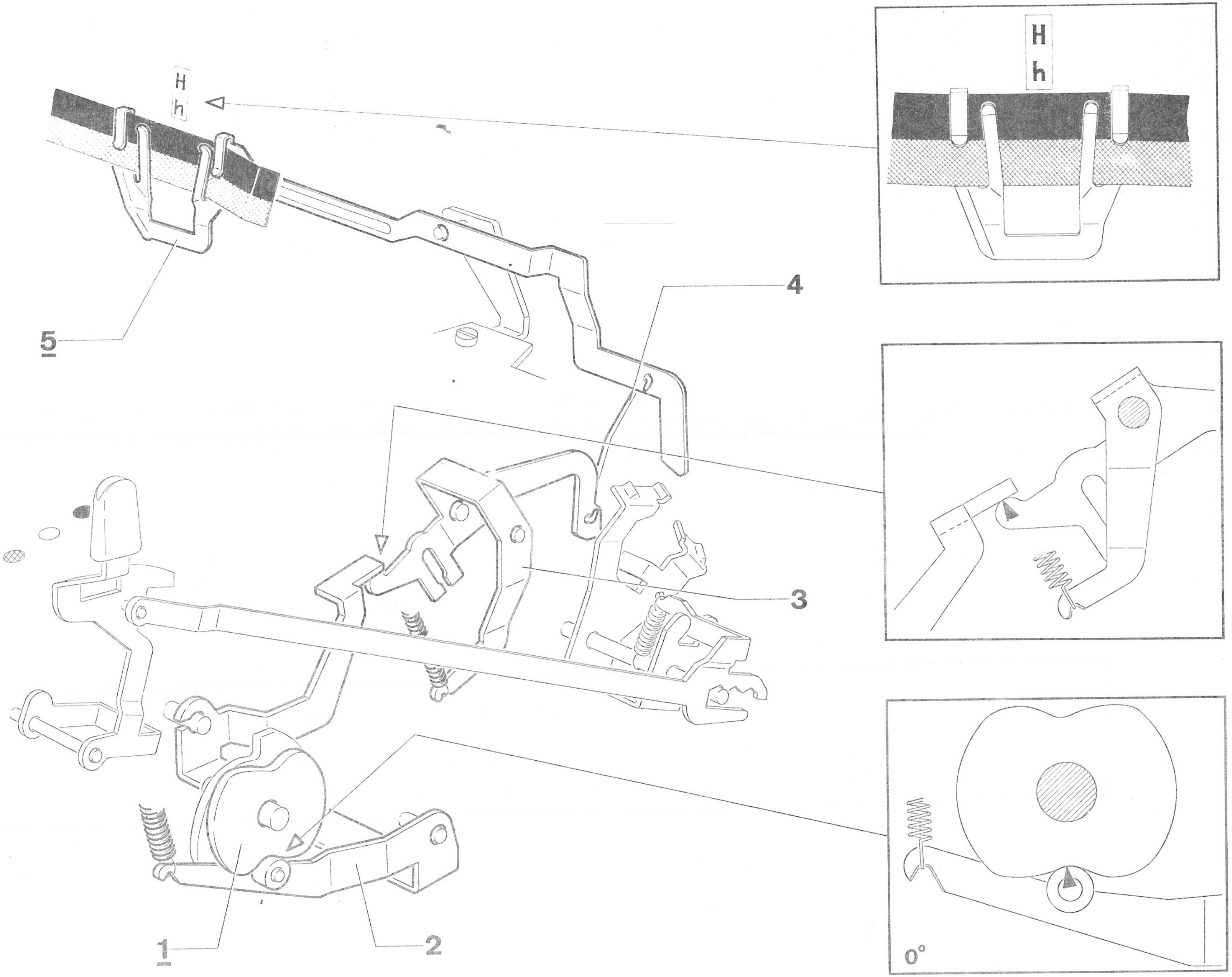
Ribbon Lift Mechanism

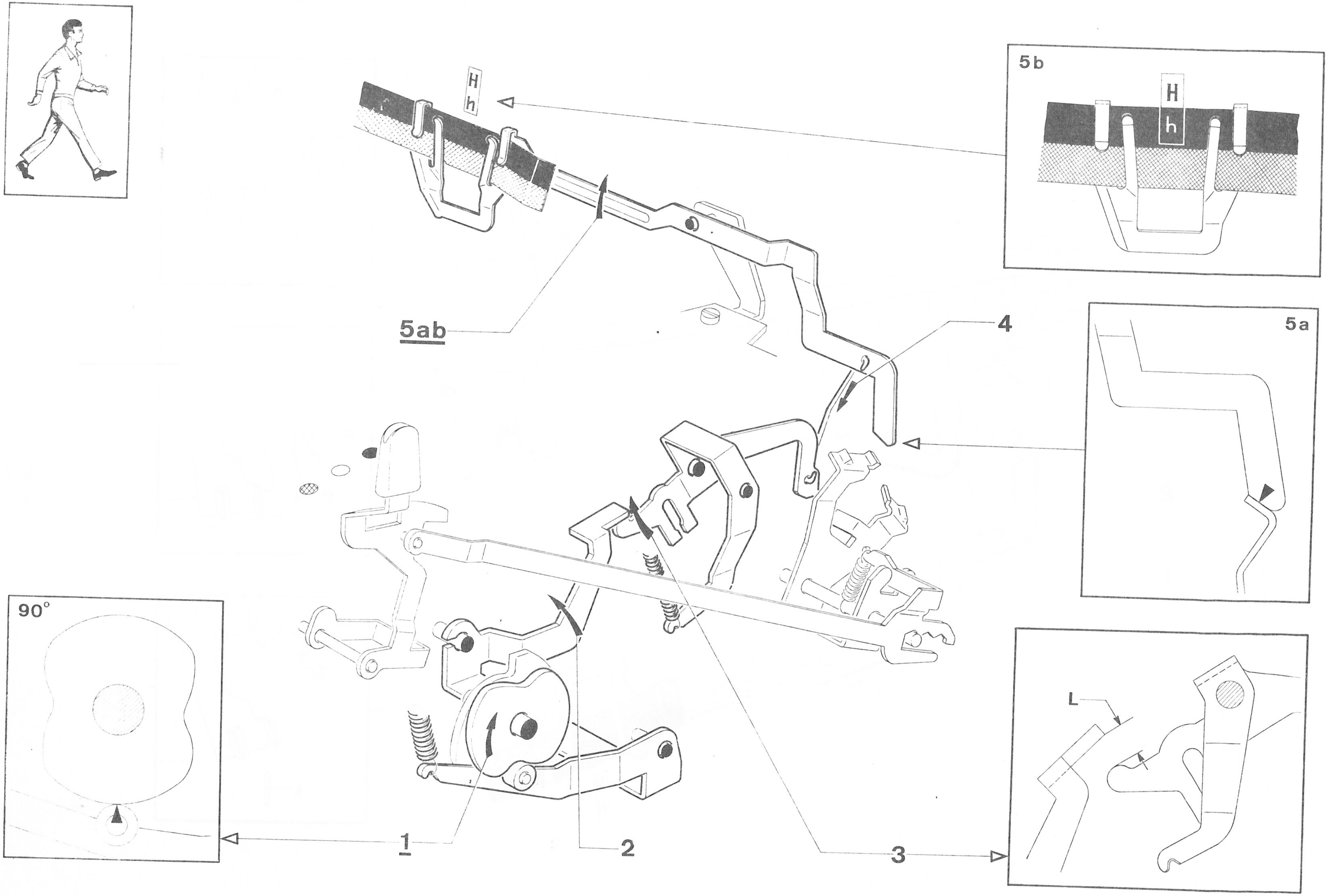
During each typing cycle the Ribbon must be positioned between the Type Face and Platen.
The position of the Bichrome Selector Lever determines which portion of the Ribbon (black or red) is placed between the Type Face and Platen.
When the Bichrome Selector Lever is in the "stencil" (middle) position, the ribbon must not lift at all.

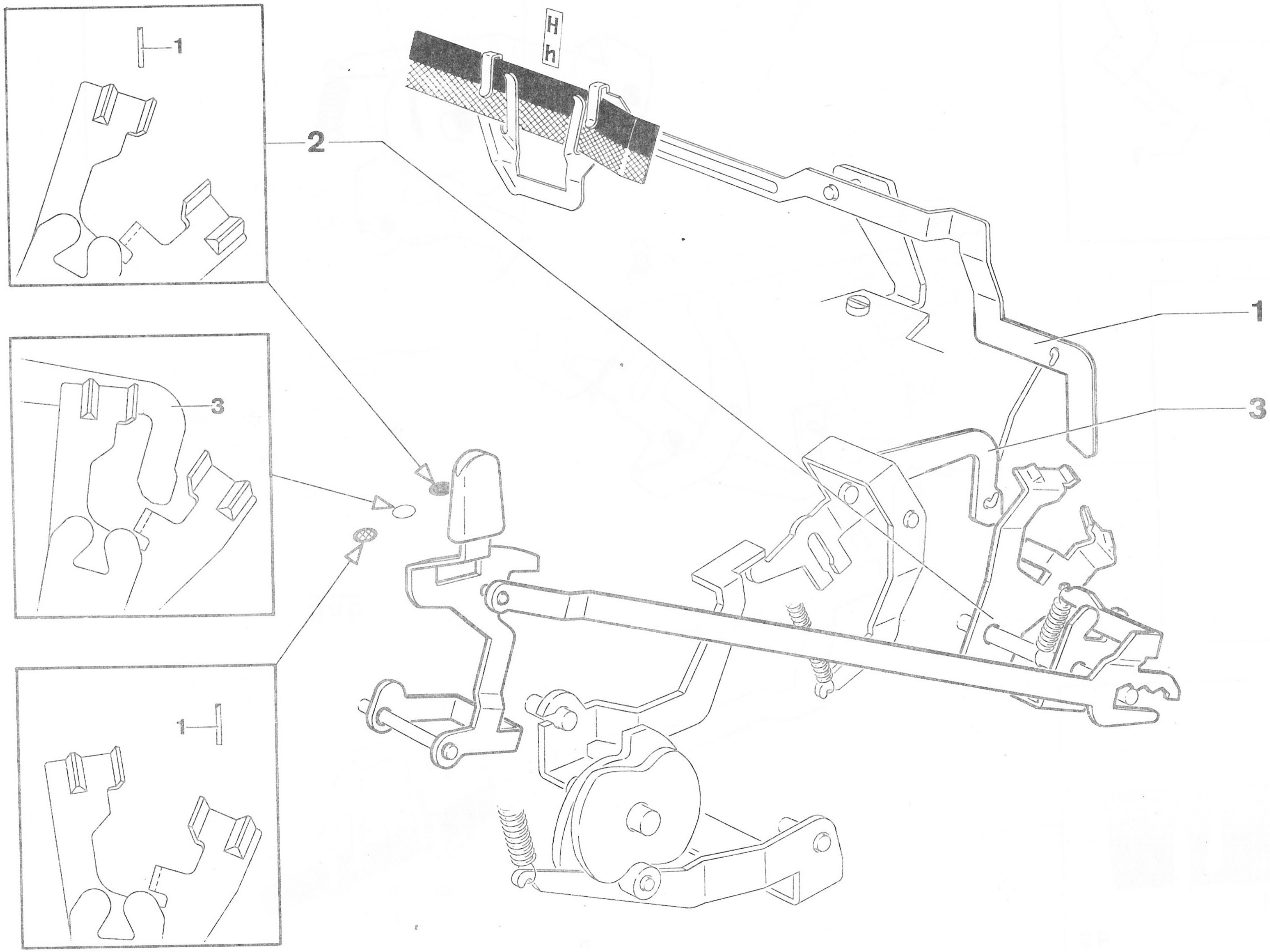
With the rotation of Print Cam (2) the Ribbon Vibrator (4) will raise an amount determined by the position of intermediate Lever (3) which in turn is controlled by the position of the Bichrome Selector Lever (1).

Note

In the following two illustrations the Bichrome Selector Lever is in the "black" position therefore, the step (S) of the Intermediate Lever (3) is in the path of extension (E) of Vibrator (4).


H
h
5
4
3
1
2
H
h
0°

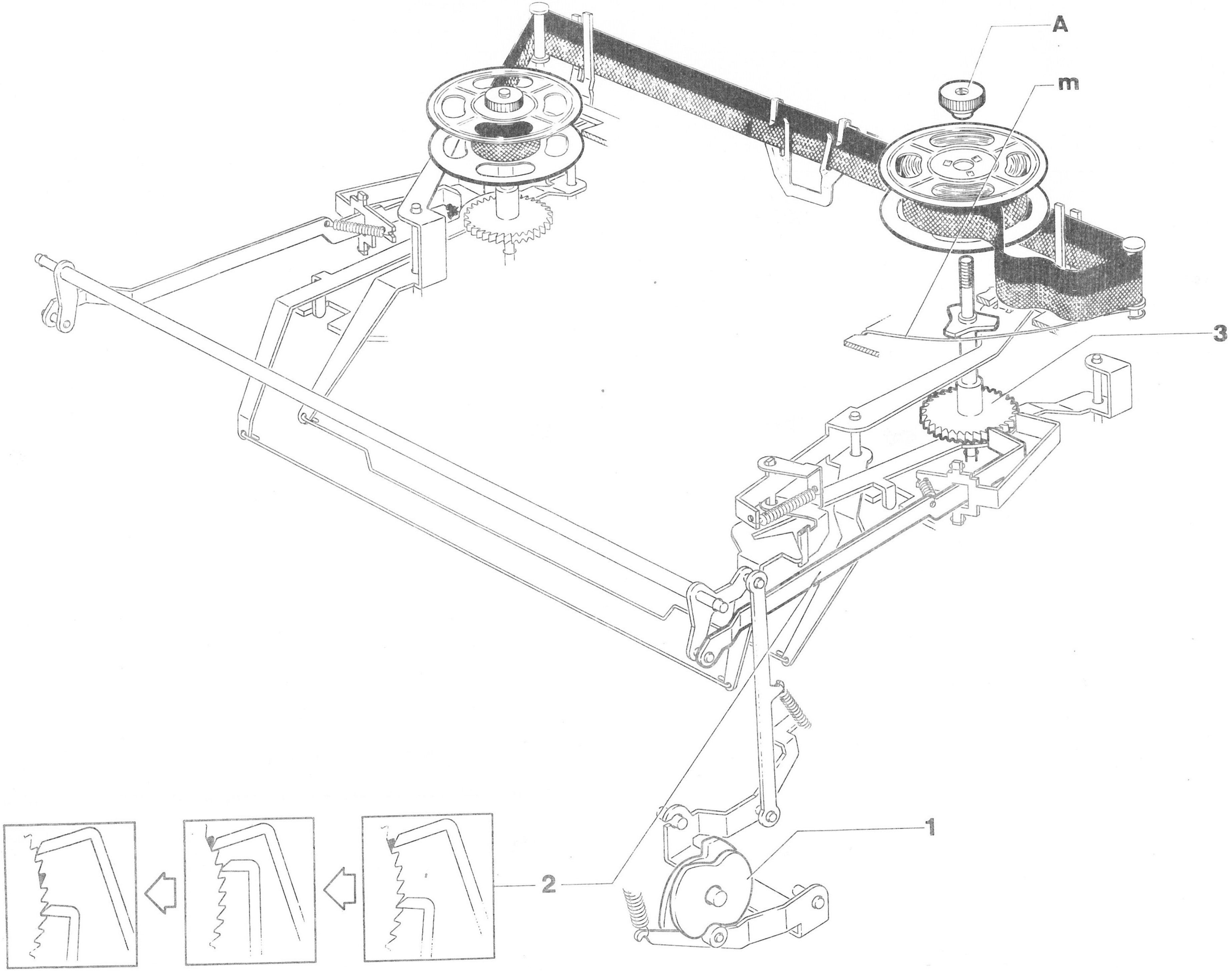

H
h
5b
H
h
5ab
4
5a
90°
L
1
2
3


H
h

Bichrome Mechanism

The height to which the Ribbon is raised is determined by:

- the Ribbon Vibrator (1) for black or red
- the Rocker (3), for stencil.


A
m

The Ribbon Spools are fastened to their respective shafts by means of nuts (A). Each spool is braked by a Spring Wire (m) thus permitting the Ribbon to be held taught.

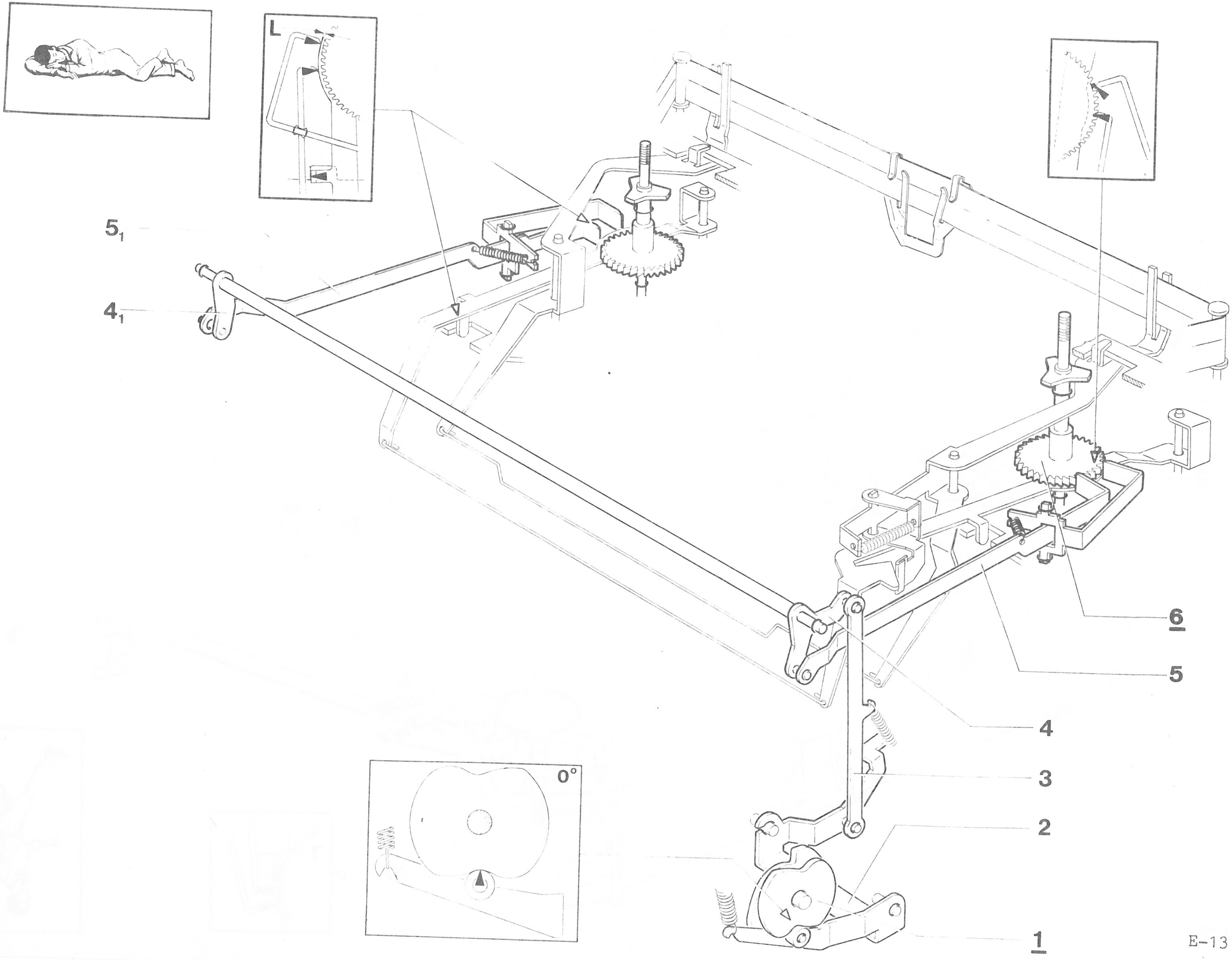
Ribbon Advance Mechanism

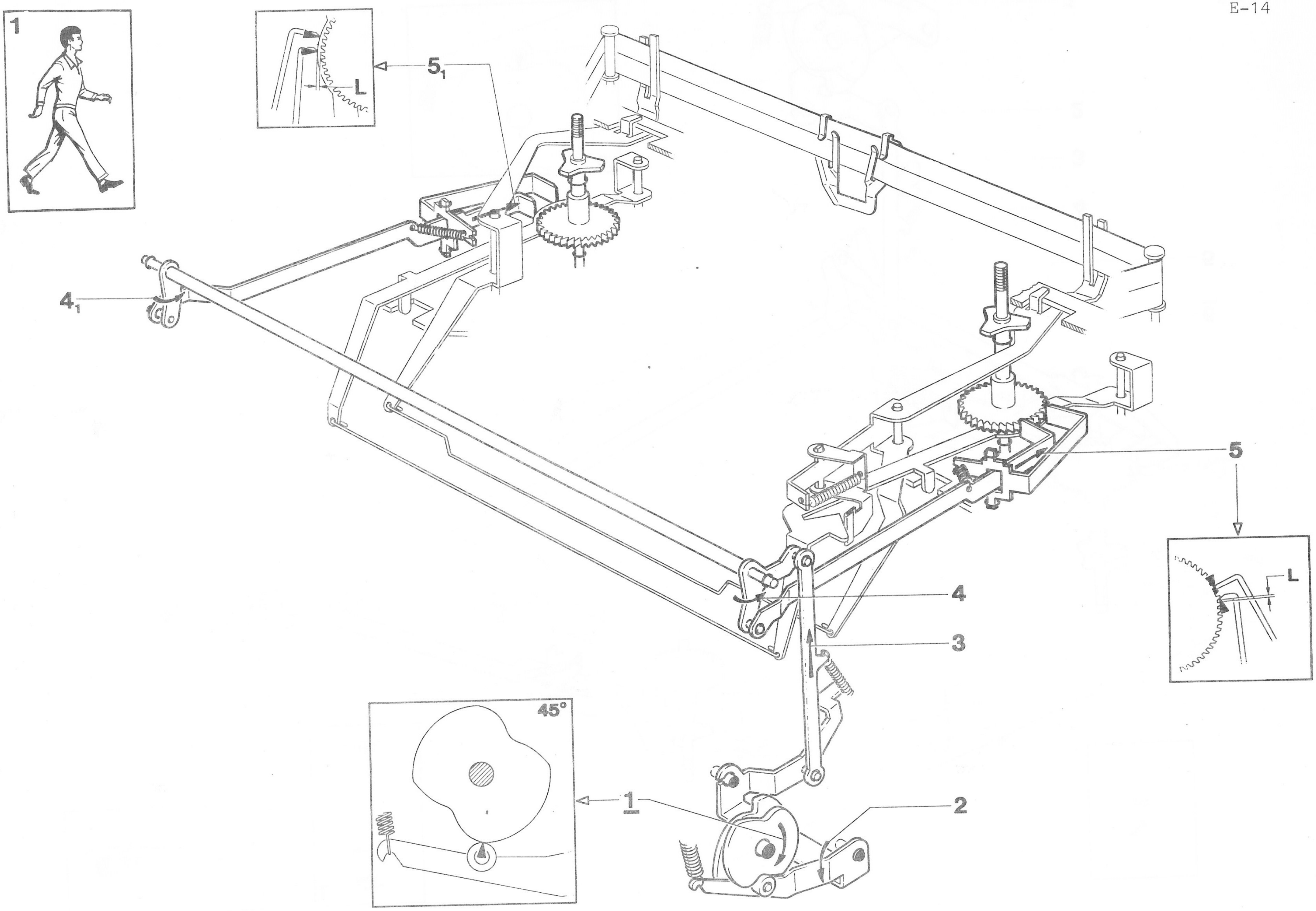
The Ribbon must advance a certain amount with each typing stroke.
The Ribbon Advance Mechanism is composed of two Take-Up Mechanisms: one for each spool.
When one works, the other idles. In the illustration the Right Spool is operating.

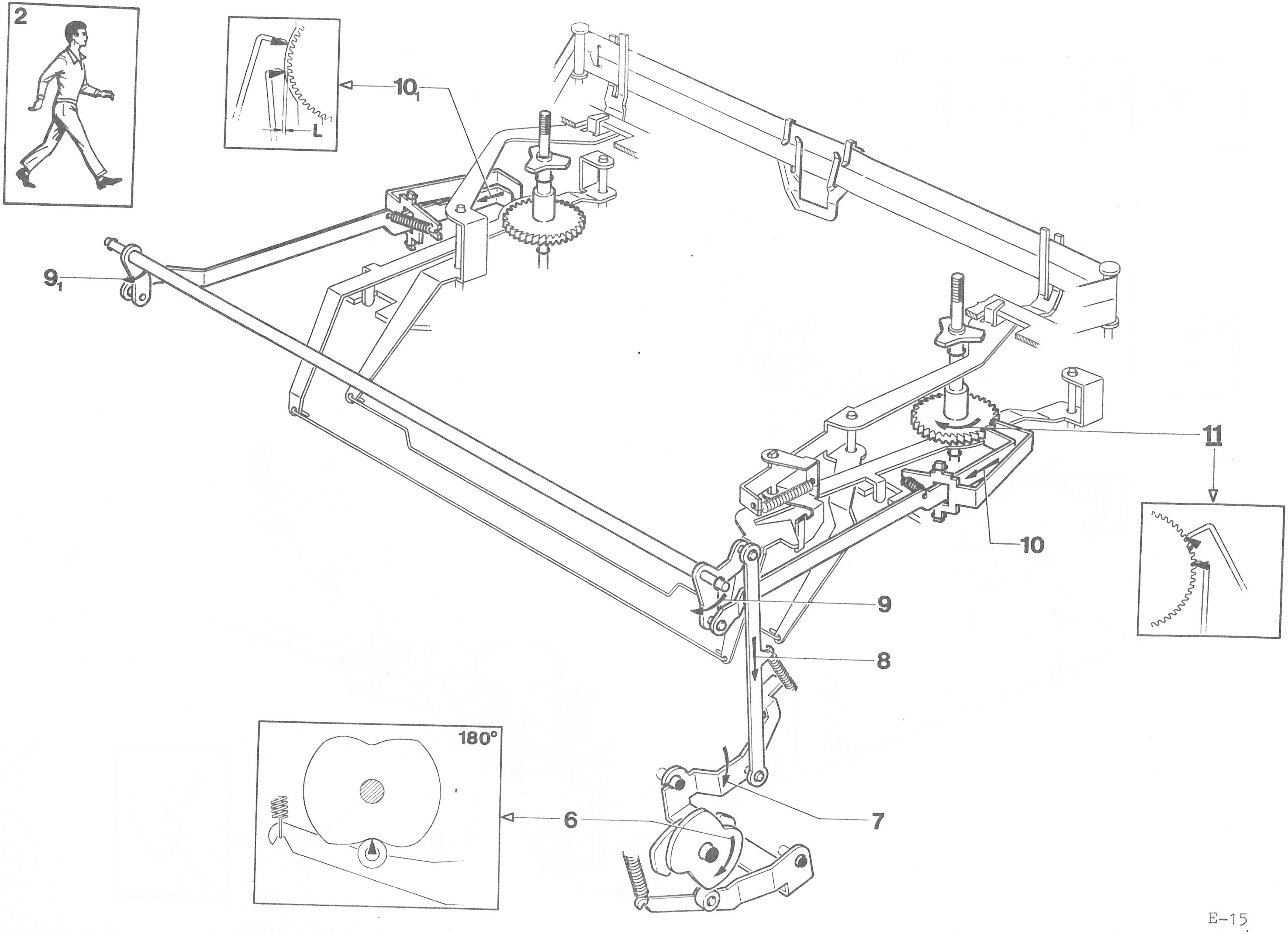
During the first 45° of rotation of Cam (1), the Feed Pawl (2) moves to the rear, detenting over two teeth of Ratchet (3).
During the last 45° of rotation of Cam (1), the Feed Pawl (2) returns to the front, turning the Ratchet (3) two teeth, thereby rotating the Ribbon Spool, causing the Ribbon to be fed from the Left Spool.

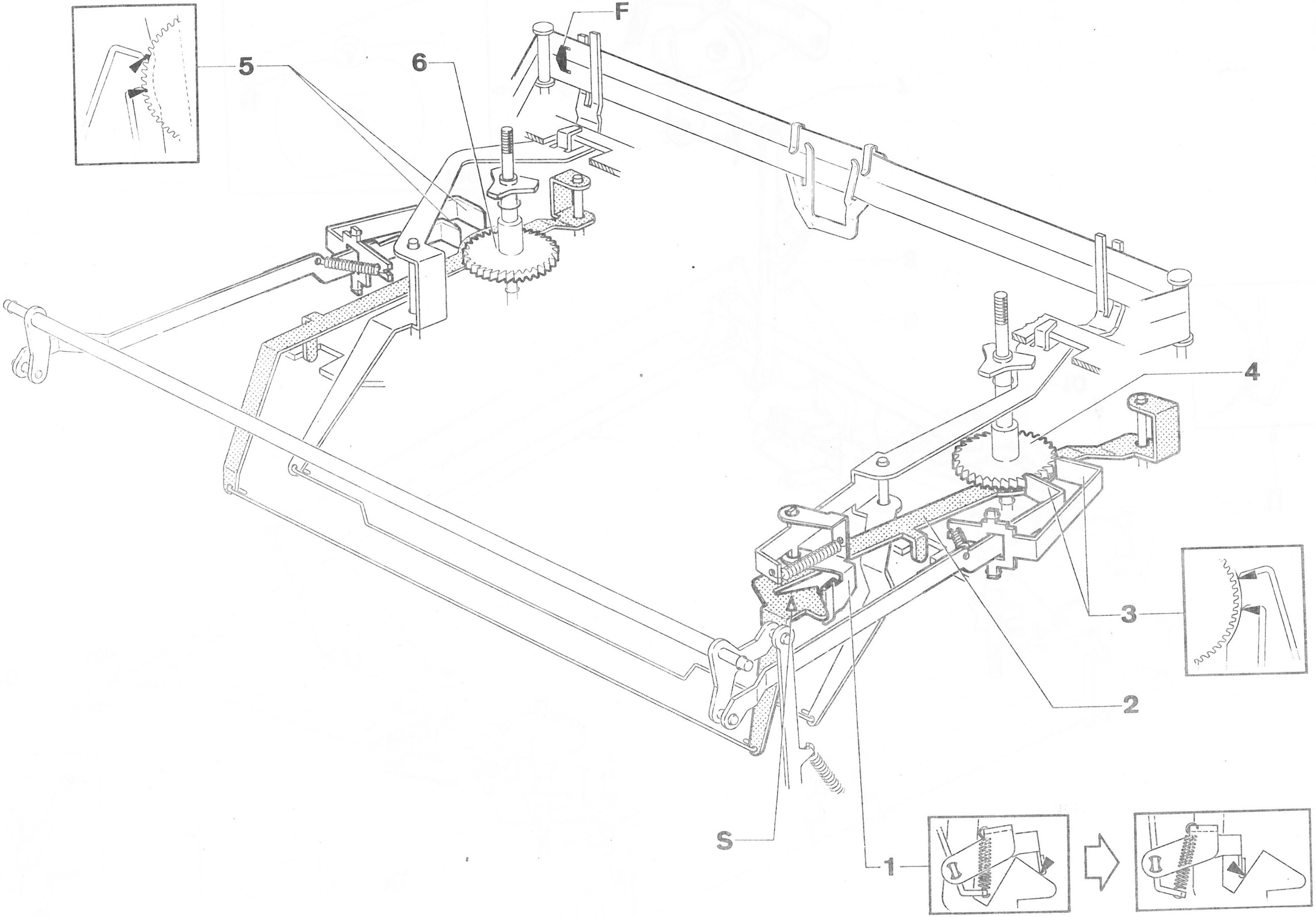
Note

Printing occurs during the 90° idle period (B) of Cam (1).


L
5_1
4_1
0°


1
L
5_1
4_1
5
L
4
3
45°
1
2


10_1
L
9_1
180°


F
S

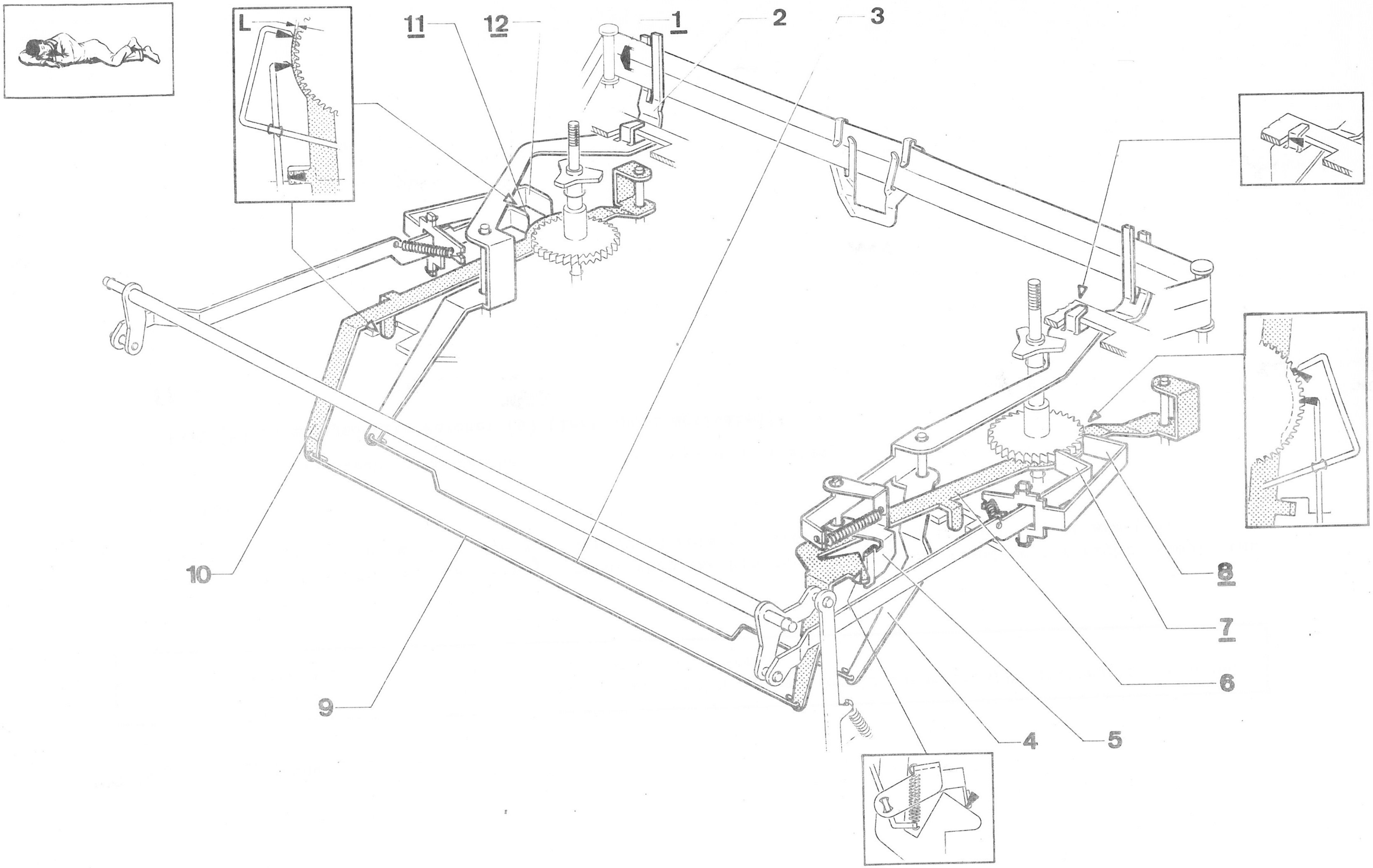
Ribbon Reverse Mechanism

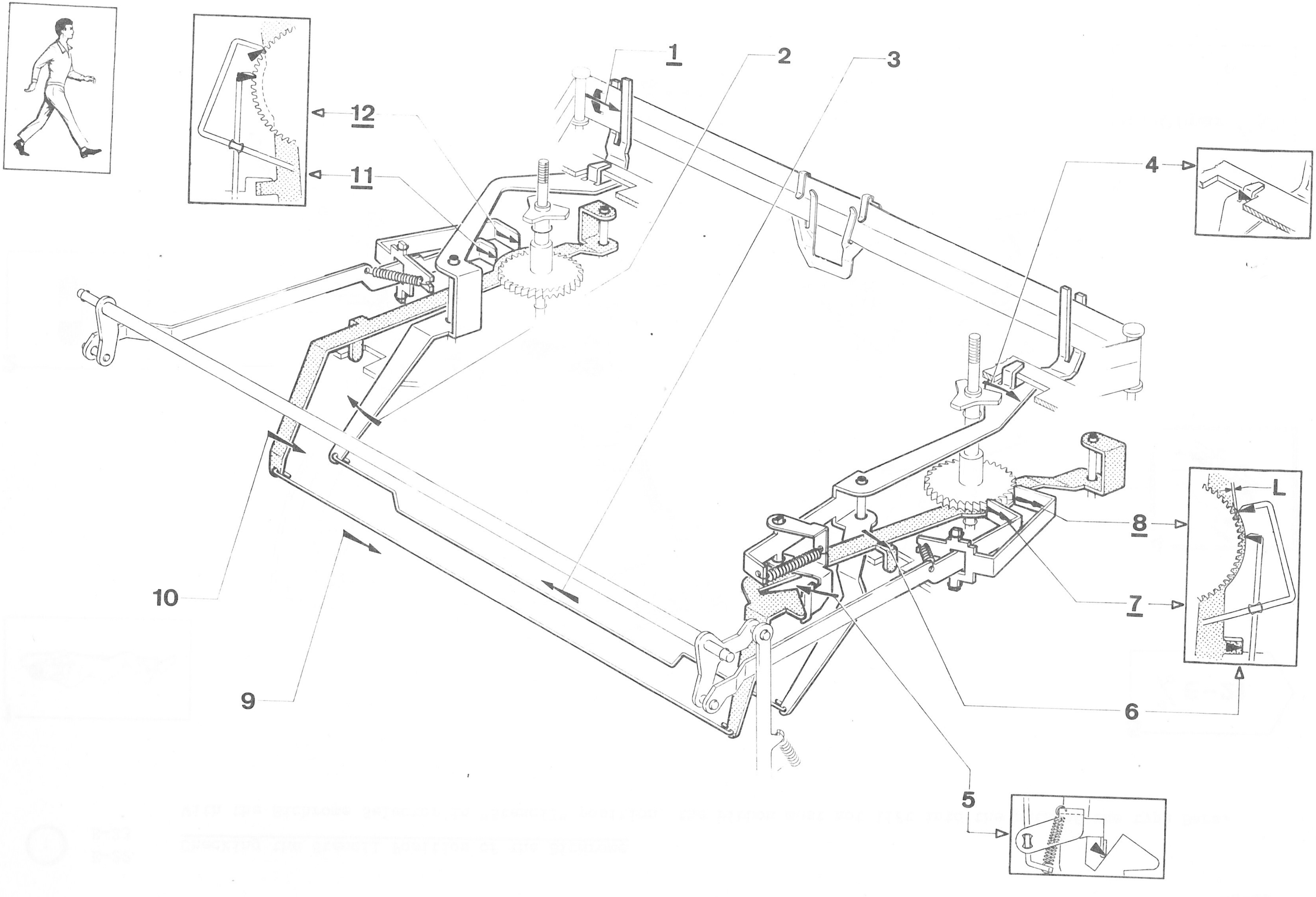
When the Ribbon is nearly all wound on one spool, the take-up motion is automatically shifted to the other spool, thus the direction of travel of the Ribbon is reversed.

A Stop (F) is installed on each end of the Ribbon. When the Ribbon is nearly all wound on the right spool, the Left Stop (F) causes the Reverse Bridge and linkage to rotate Positioner (1) on incline (S) of Arm (2).

Consequently:

- Pawl (3) is disengaged from Ratchet (4) (right spool deactivated)
- Pawl (5) is engaged with Ratchet (6) (left spool activated)

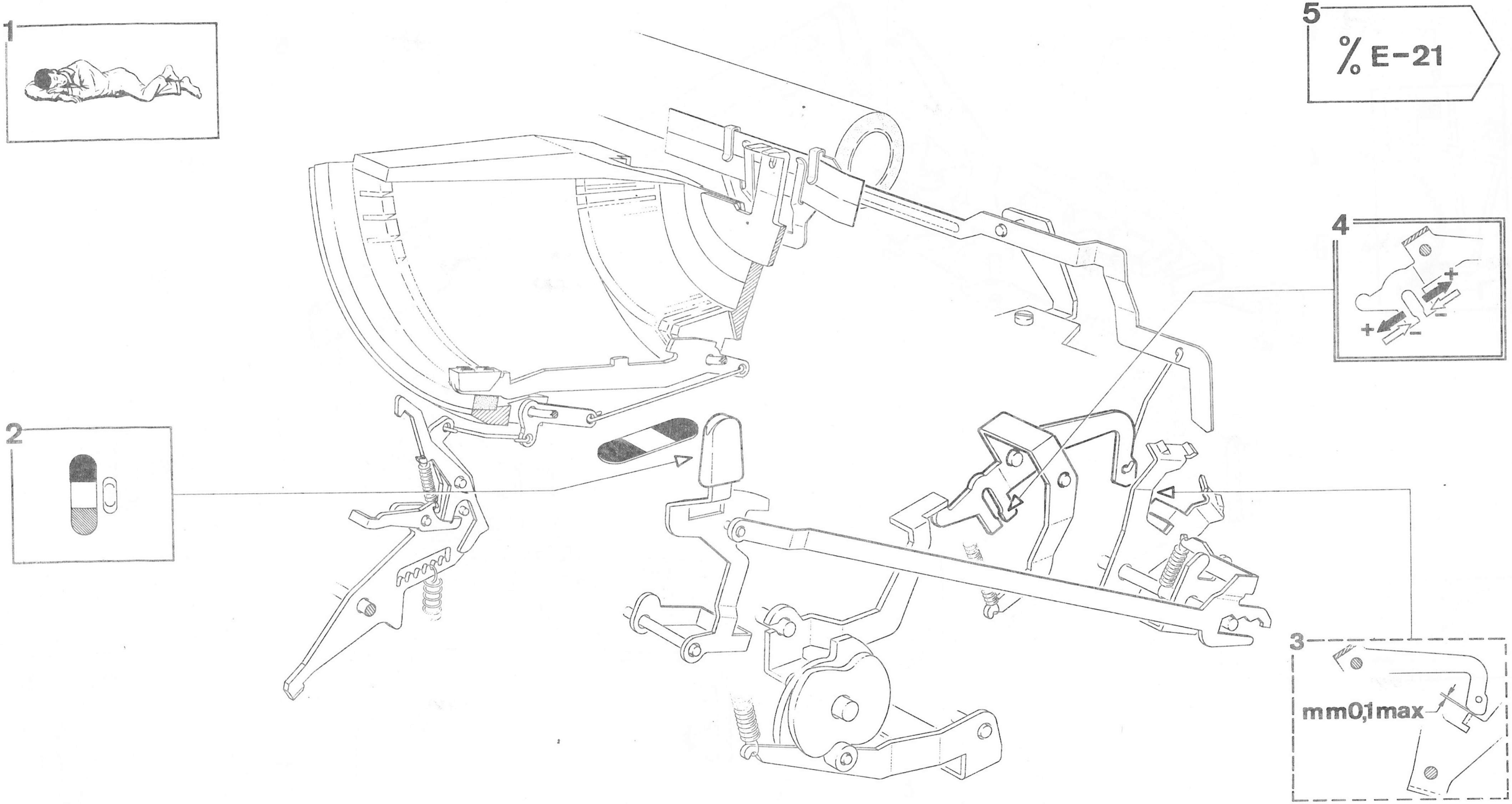

L


L

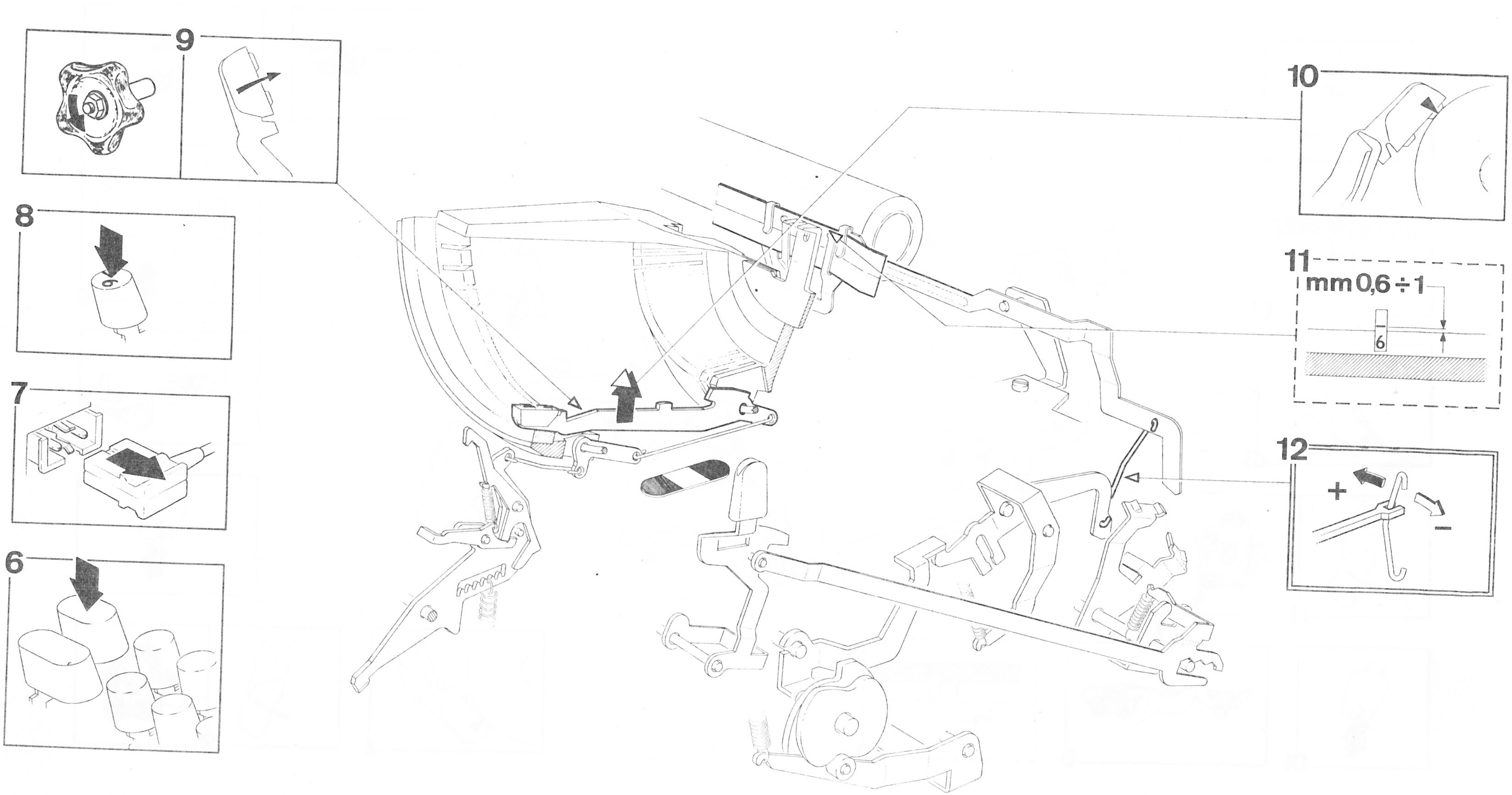
① E-22
E-23

Checking the Stencil Position of the Bichrome

With the Bichrome Selector in "Stencil" position, the ribbon must not lift into the path of the type Bars.


1
5
% E-21
4
+
-
+
-
2
3
mm0,1max

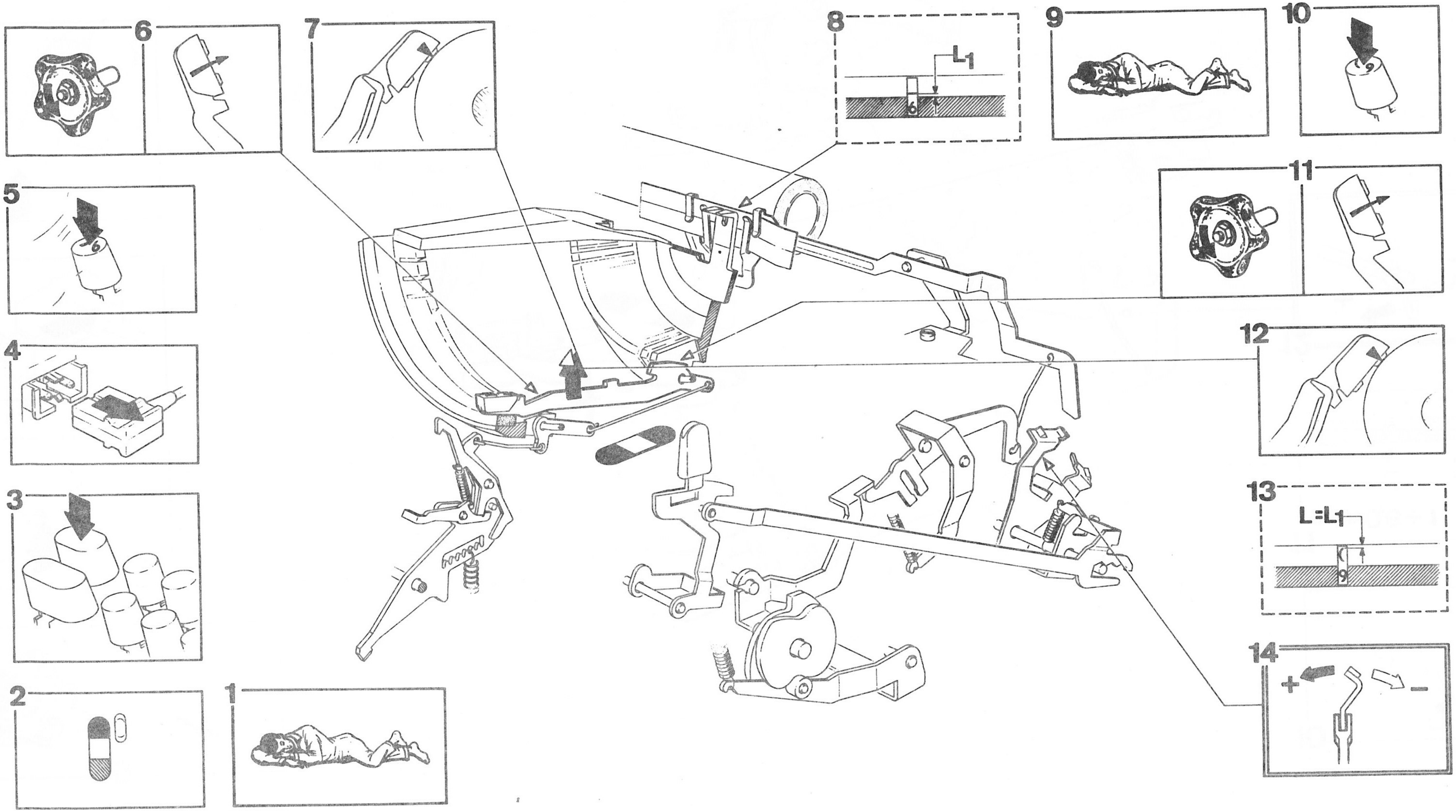
Checking the Stencil position of the Bichrome (continued)


9
8
6
7
6
10
11
mm 0,6 ÷ 1
6
12
+
-

Note - Repeat check with machine "ON" and by maintaining Key 6 in the repeat position.

E-20 ② Checking the Black position of the Bichrome

With the Bichrome Selector in the "black" position, the lowest and highest characters must strike precisely the black area of the ribbon.

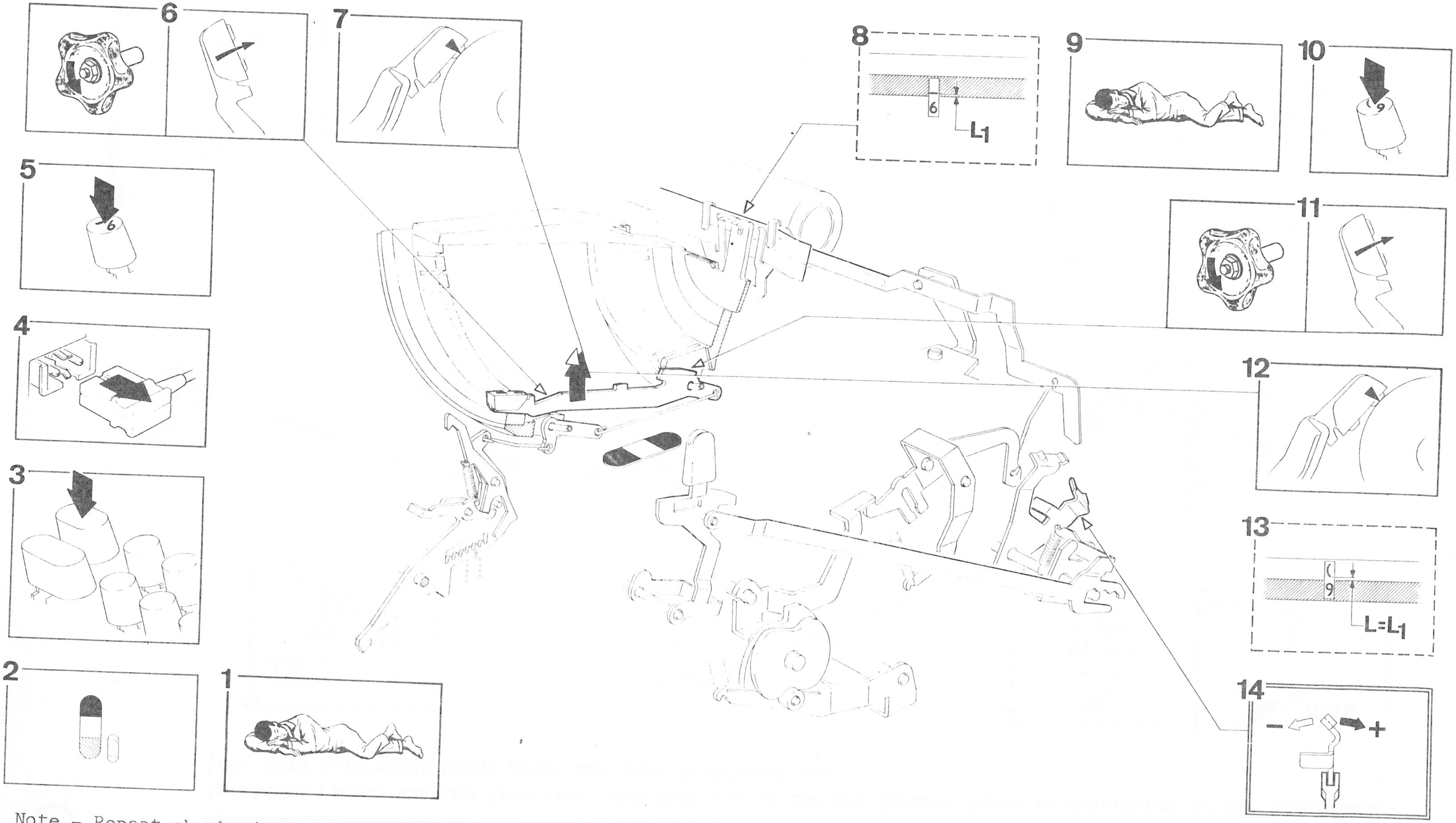

6
7
8
L1
6
9
10
9
5
6
11
4
12
3
13
L = L1
9
14
+
-
2
1

Note - Repeat check with machine "ON".

③

Checking the Red position of the Bichrome

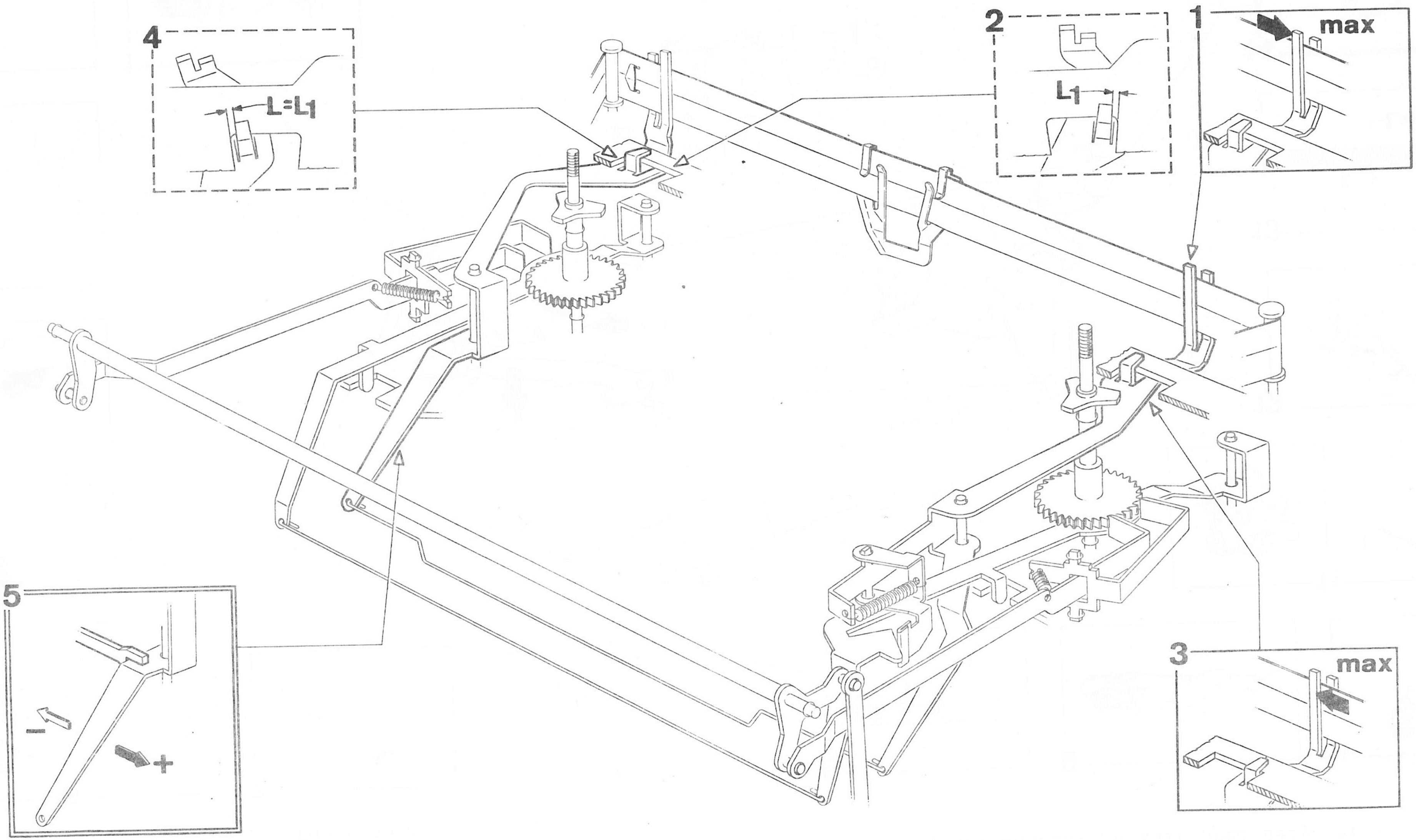
With the Bichrome Selector in the "red" position, the lowest and highest characters must precisely strike the red area of the ribbon.


6
7
8
6
L1
9
10
9
5
6
11
4
12
3
13
9
L=L1
2
1
14
-
+

Note - Repeat check with machine "ON".

④ E-25 Checking the position of the Ribbon Reverse Forks

In either ribbon winding direction, the position of the two Reverse Forks is determined by the right Fork (see page E-18/right upper panel and page E-19/panel 4).



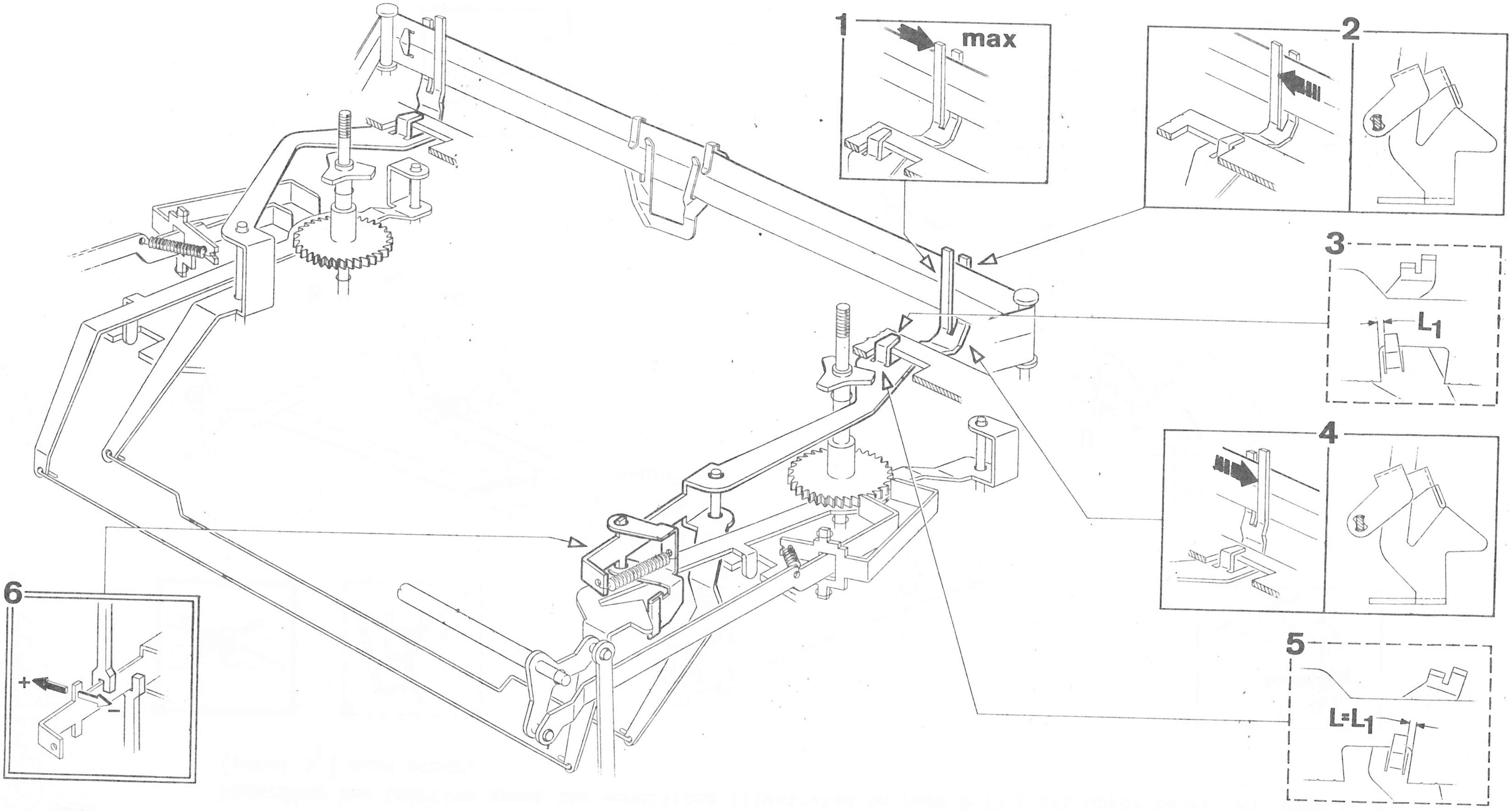
Note - This check necessitates the removal of the ribbon spools.

E-24
E-26

⑤

Checking the Ribbon Reverse Detent

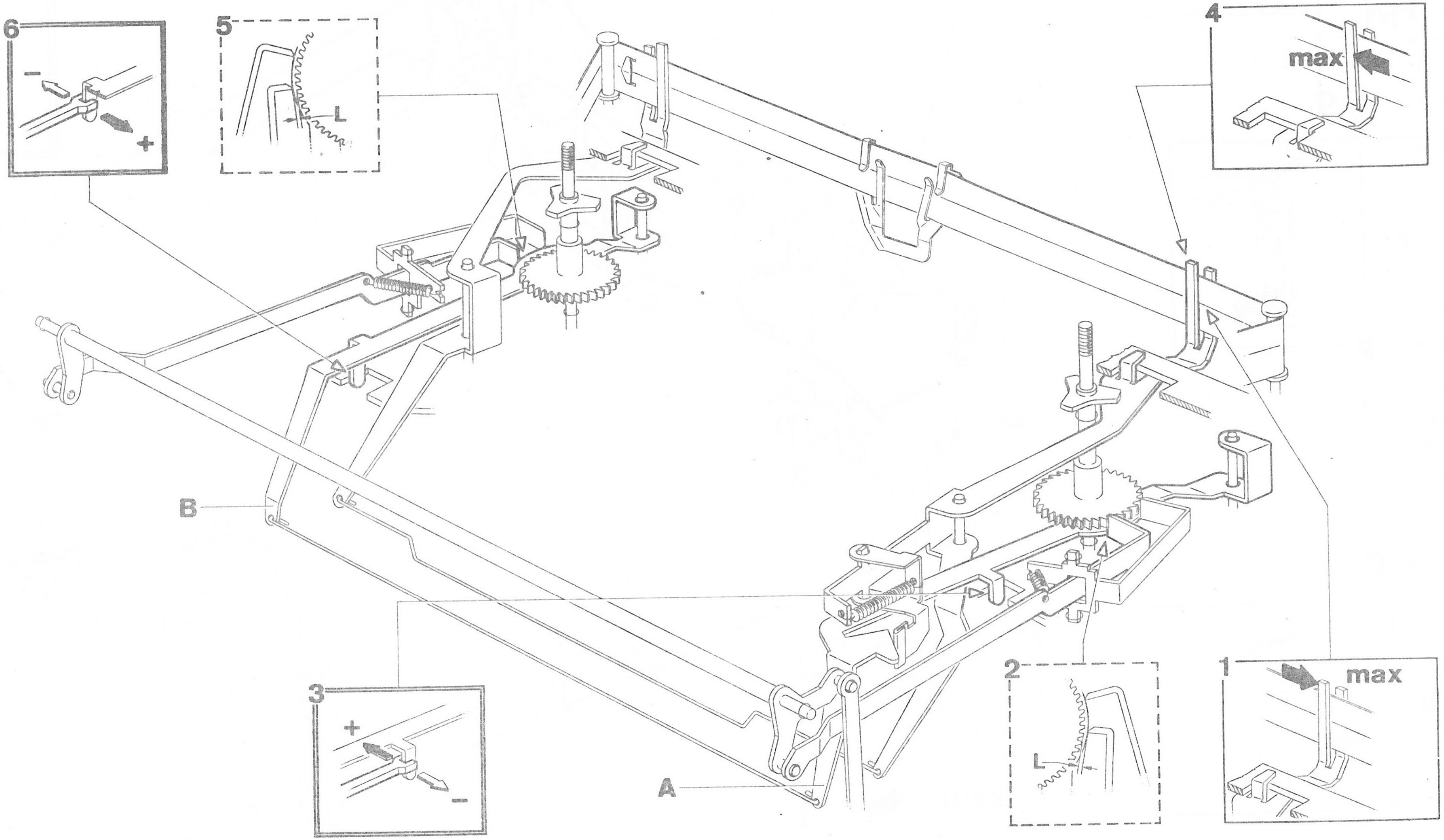
During ribbon reverse, the conditions illustrated on page E-18 (lower panel) and page E-19 (panel 5) and vice-versa must take place.



Note - This check necessitates removal of the Ribbon Spools.

⑥ E-25 Checking the exclusion of the Feed Pawl for the Inactive Spool

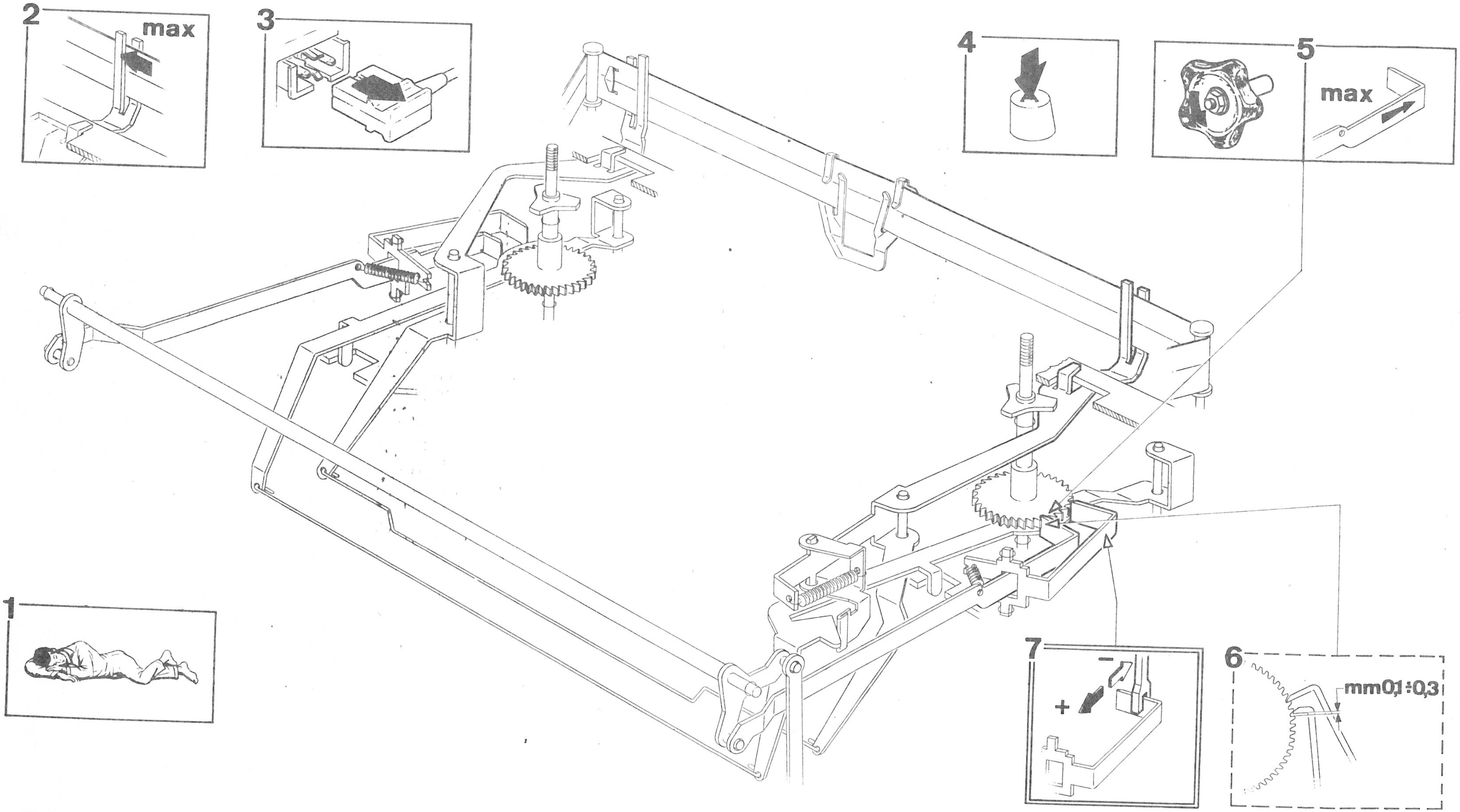
Regarding the inactive spool the conditions illustrated on page E-13 (left upper panel) and page E-14 (panel 5_1) must occur.



Note - This check requires removal of the ribbon spools. In case a wing is adjusted, it is necessary to make sure that the rest conditions of the other wing have not been changed. In which case work on Tips A and B.

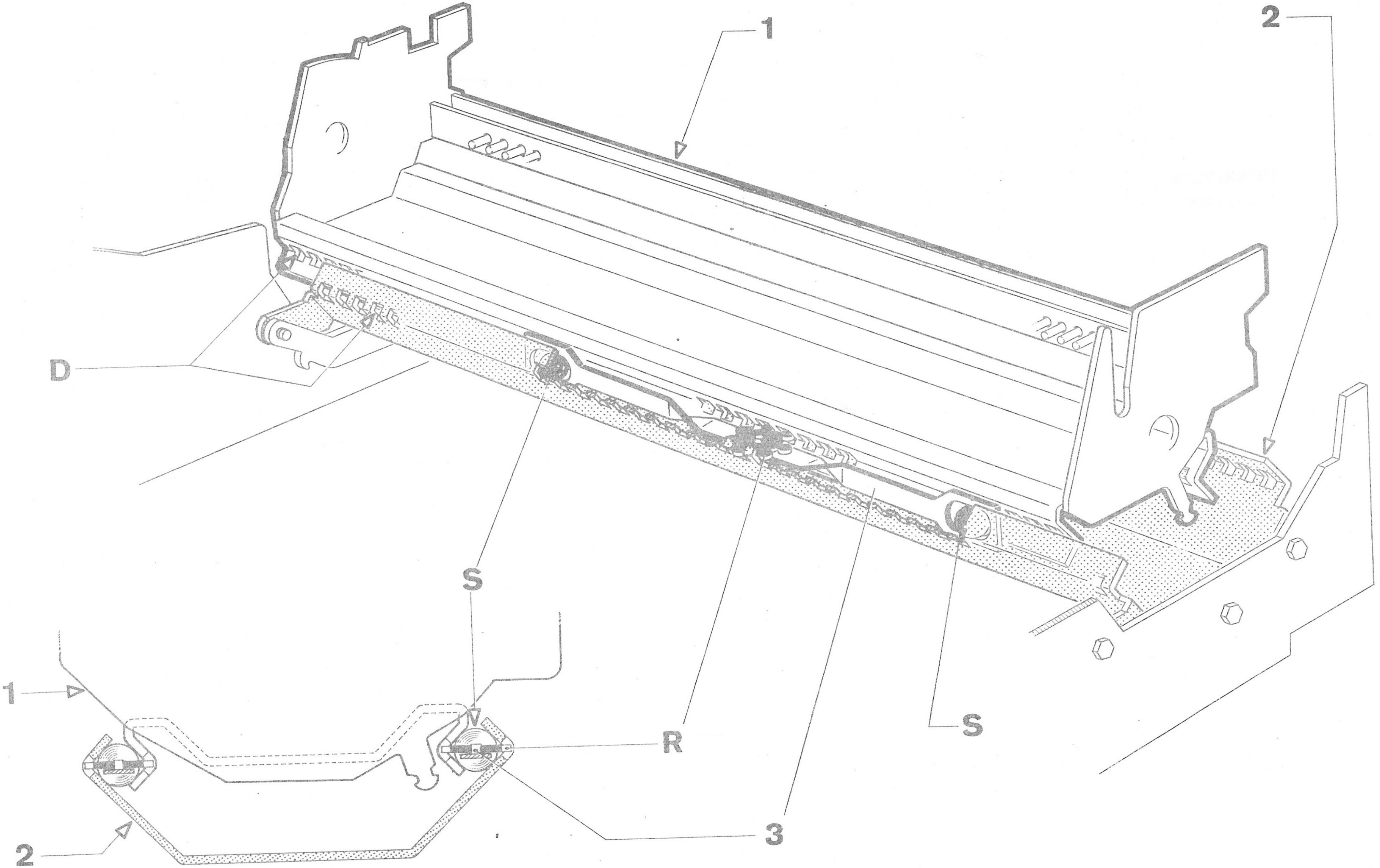
⑦ Checking the Quantity of Ribbon Feed

During each print cycle, the conditions illustrated on page E-10 (panels 2) must occur.



Note - This check requires the removal of the ribbon spools. Repeat check for left wheel.

Section F
ESCAPEMENT


1
2
D
S
R
3
S
1
2

Foreword

After the Type Bar prints, the Carriage moves one space leftward to provide space for the next character. This motion is called Escapement.

Before explaining how the Escapement operates, we must first talk about the Carriage.

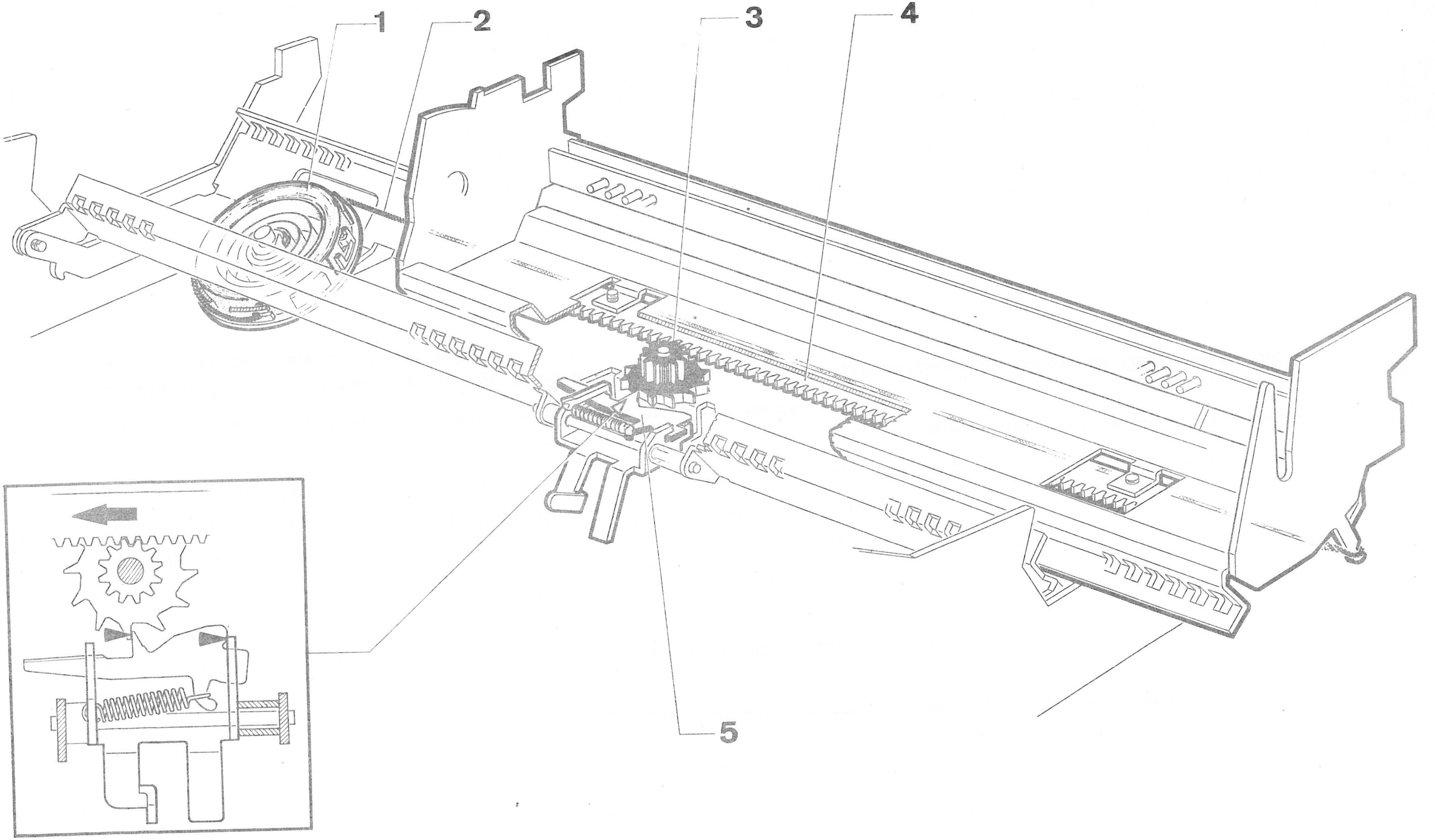
Carriage

The Carriage is composed of the Fixed Guide (2) and the movable Carriage (1).

The Fixed Guide (2) is firmly fastened to the chassis of the machine and the Carriage (1) glides inside the Guide.

Two Steel Ball Retainers (3), one in the front (visible in illustration), and one in the rear, with steel balls (S), are installed in the "V" between the Carriage and Fixed Guide.

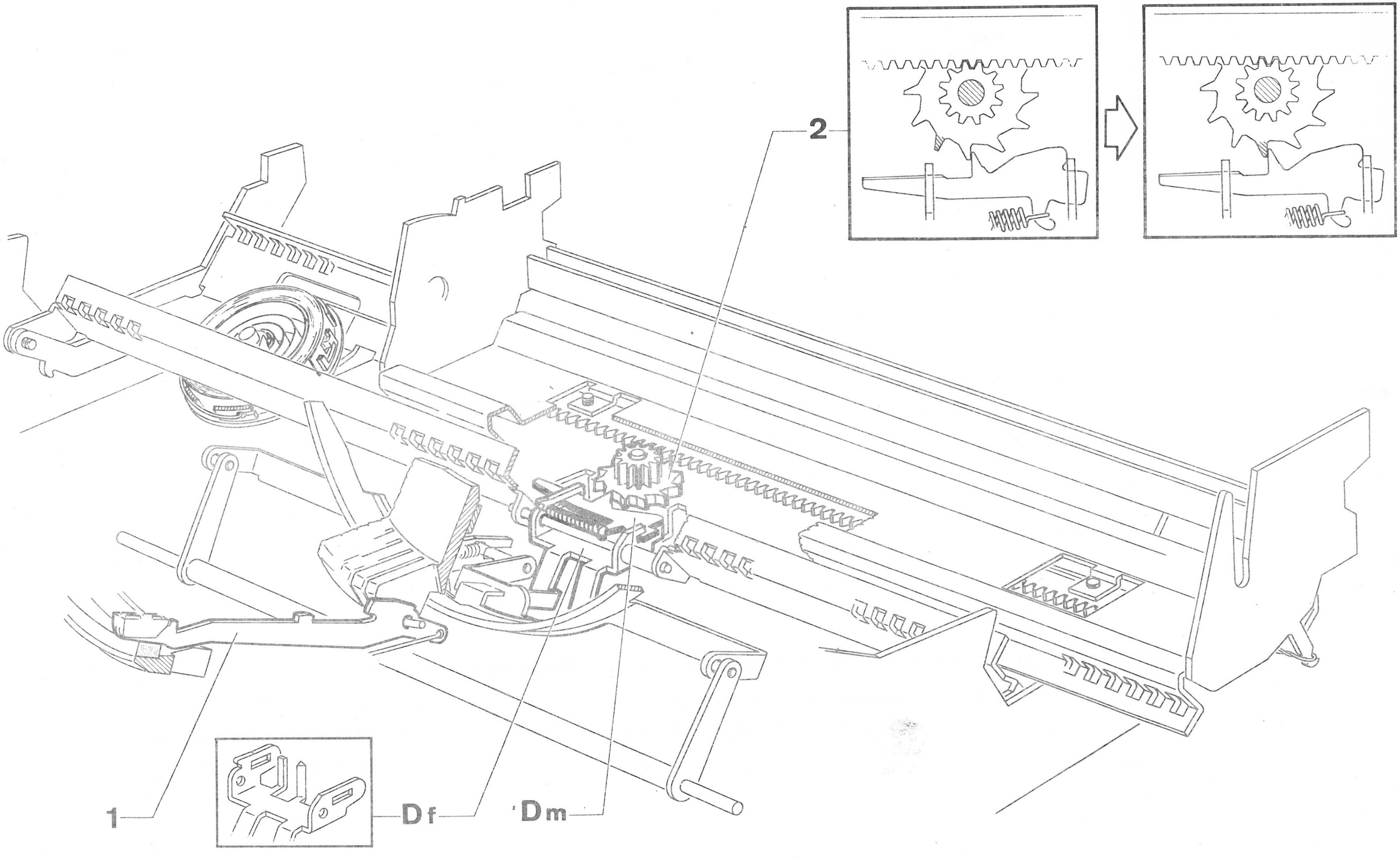
The Pinion (R), freely fastened on the Steel Ball Retainers, engages with notches (D) contained throughout the V rails of the Carriage and Fixed Guide.



Positioning the Carriage

The Carriage is constantly pulled leftward by Spring (1) and Draw Band (2).
Rack (4), which is fixed to the Carriage is always in mesh with Escapement Pinion (3).

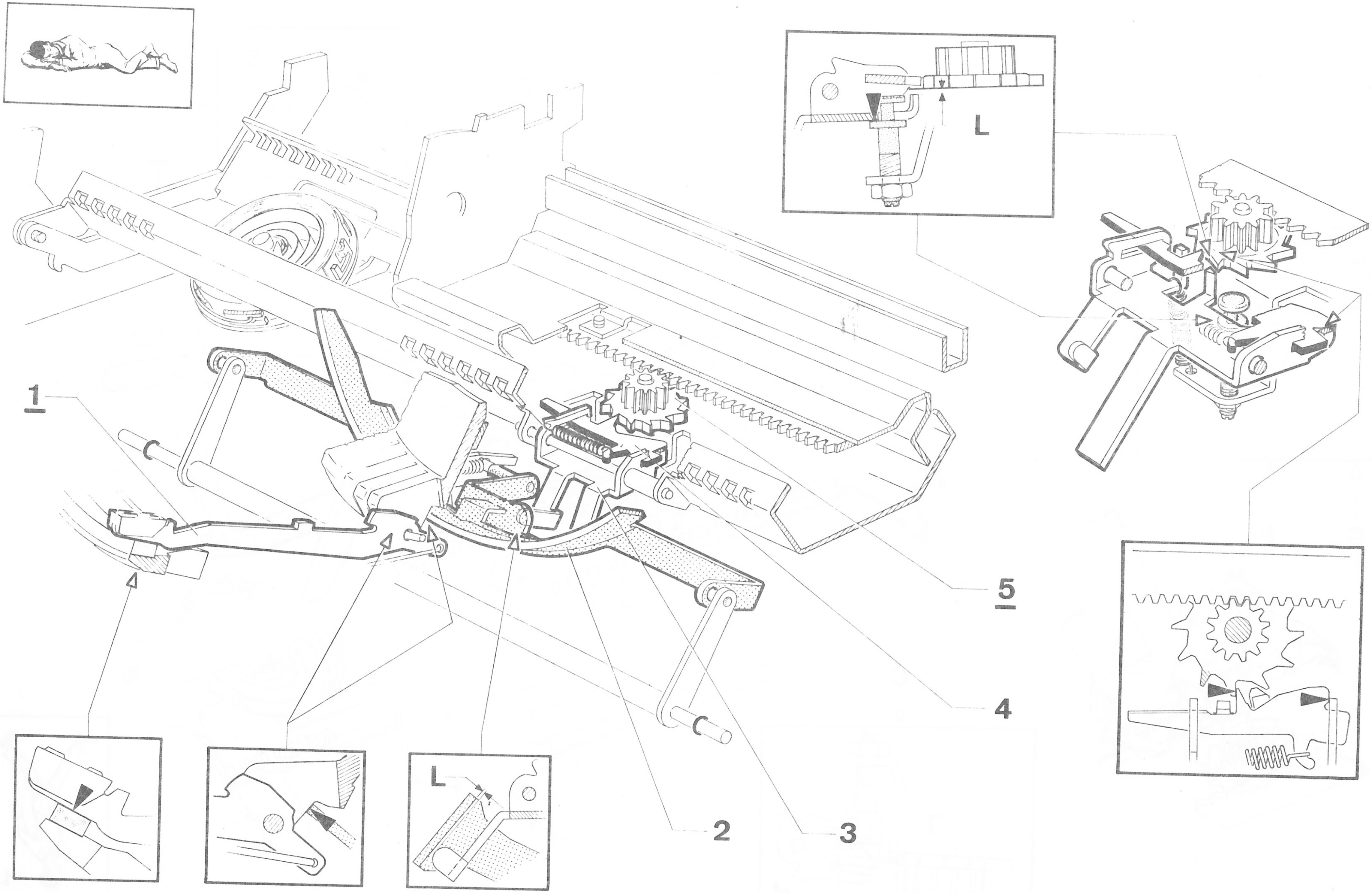
Pinion (3), which is fixed to the Escapement Wheel, is shown with one tooth against the "Loose Dog" (5) (see insert)..

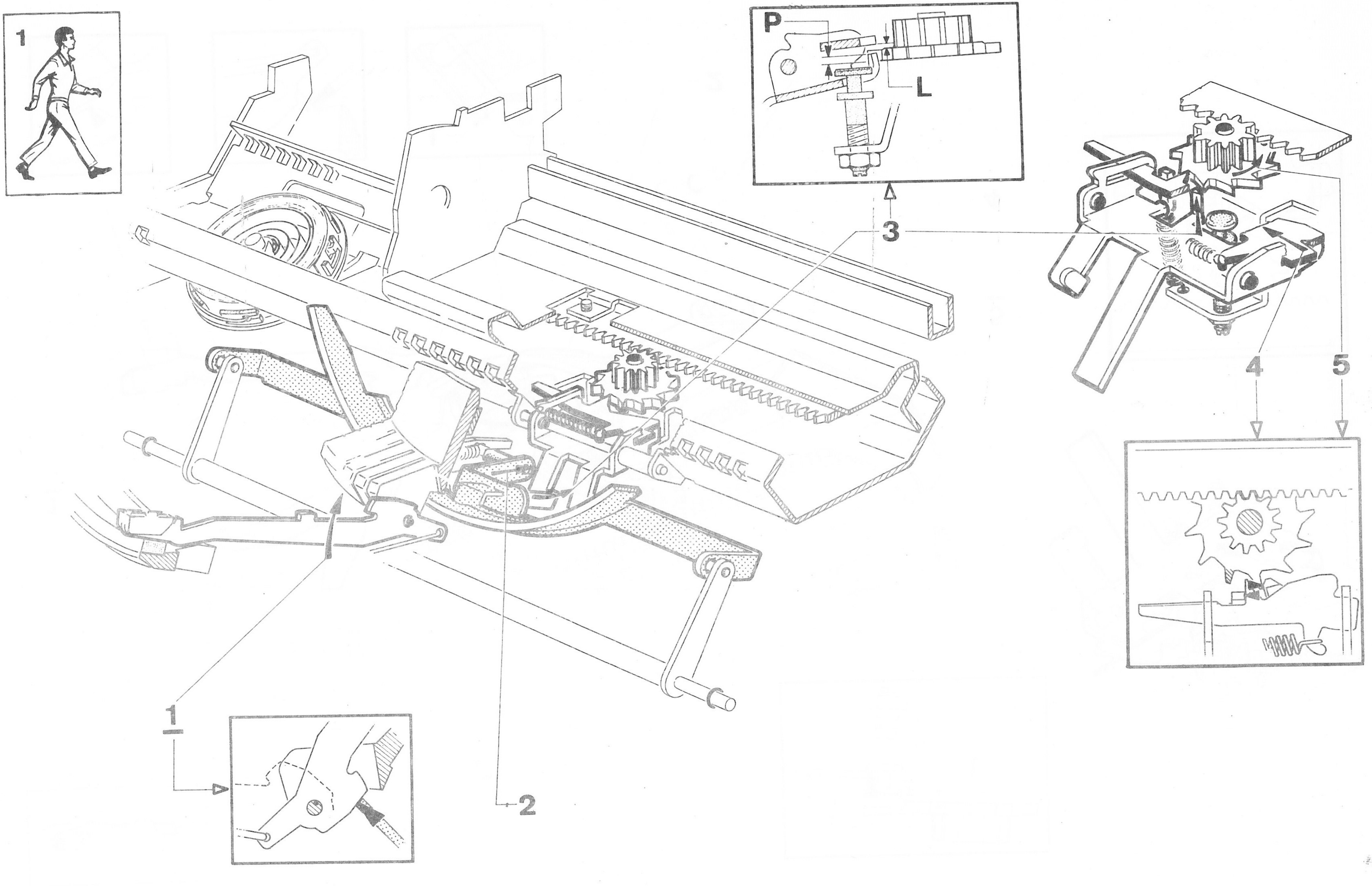

2
1
Df
Dm

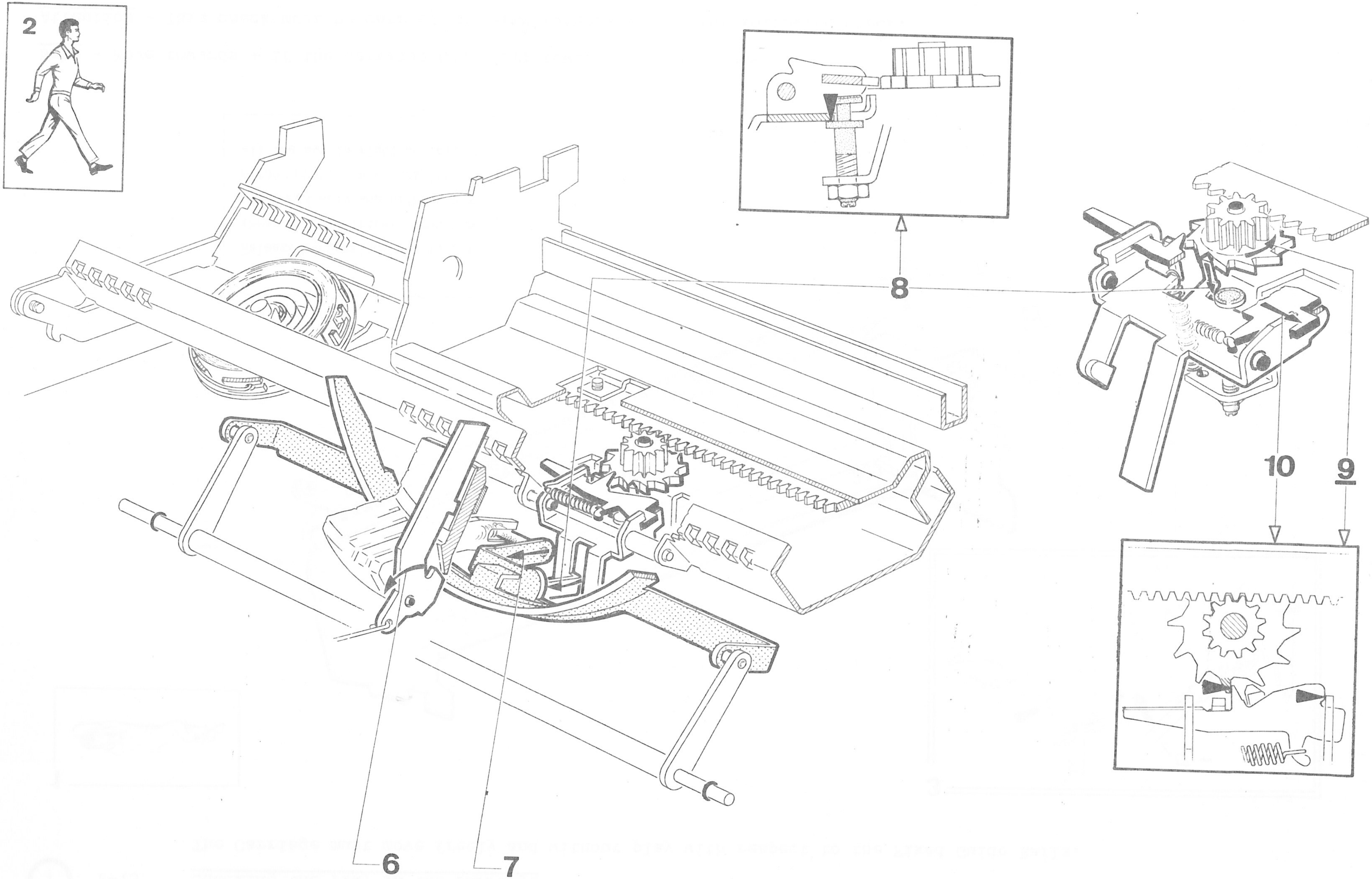
Escapement Mechanism

The Carriage moves one space leftward after each typing stroke.

When the Type-Bar (1) rotates to the platen, it actuates the Fixed Dog (Df) and the Loose Dog (Dm) so the Pinion (2) can rotate one tooth which corresponds to one typing space of the Carriage.

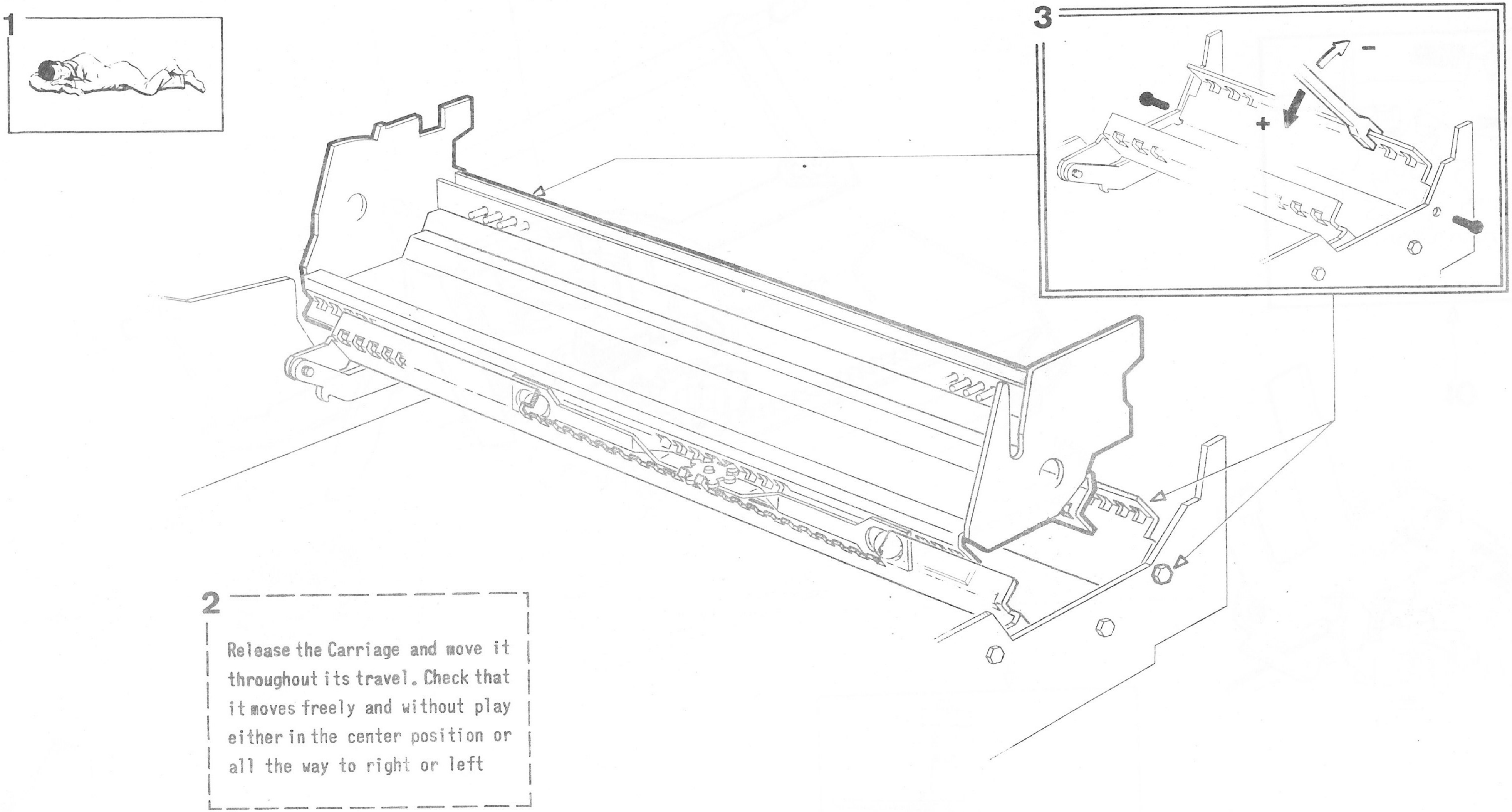

L
L


P
L



① F-13 Checking the play in the Carriage

The Carriage must move freely and without play with respect to the Fixed Guide Rails.



Release the Carriage and move it throughout its travel. Check that it moves freely and without play either in the center position or all the way to right or left

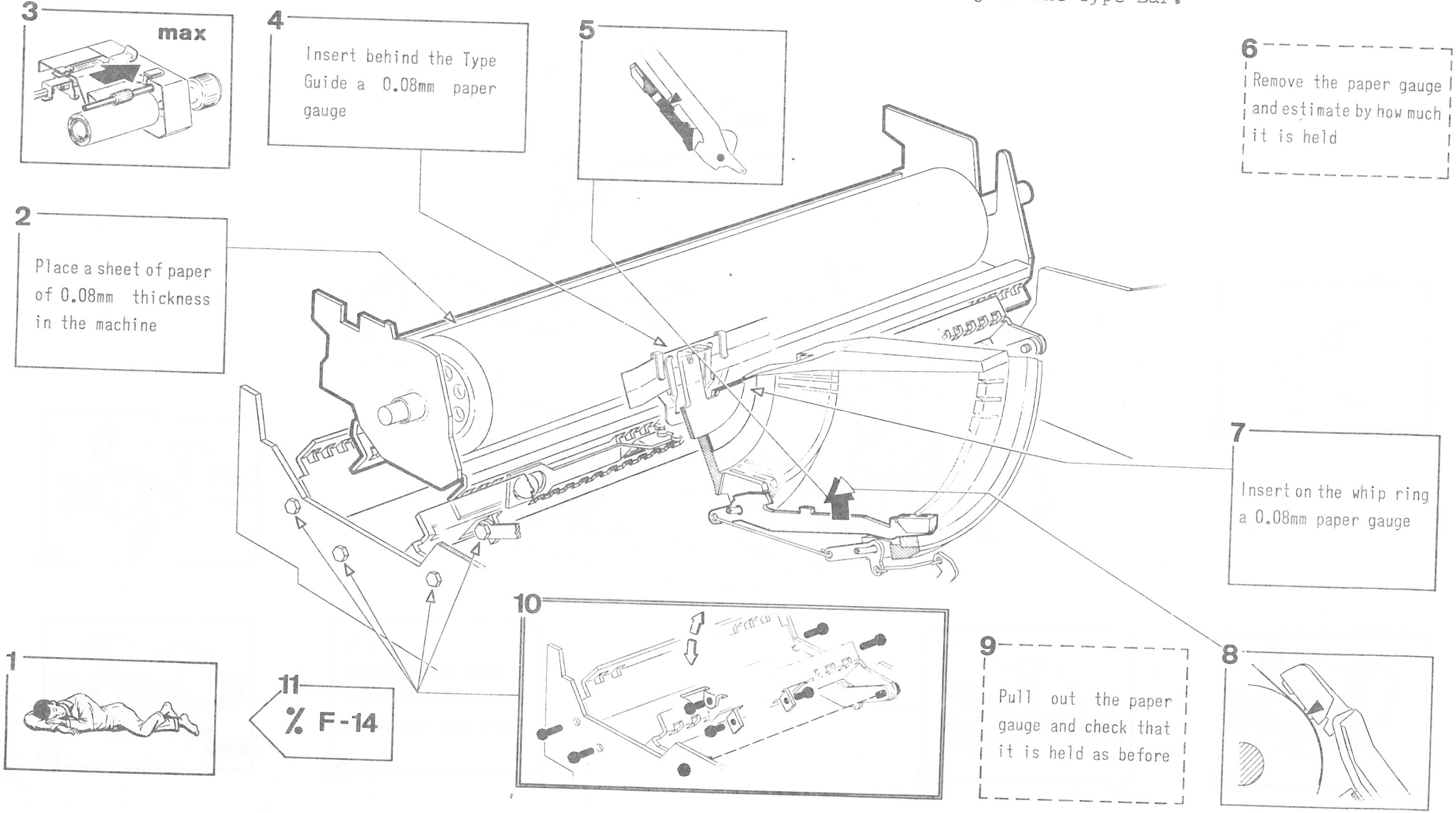
Note - Move towards + if the Carriage has play; towards - if it binds.

Attention - This check must be carried out simultaneously with the following check.

F-12 ② B-25
D-16

Checking the Ring and Platen Clearance

The Type Bars must reach the platen following a slight flexing of the Type Bar.



1

2 Place a sheet of paper of 0.08mm thickness in the machine

3

4 Insert behind the Type Guide a 0.08mm paper gauge

5

6 Remove the paper gauge and estimate by how much it is held

7 Insert on the whip ring a 0.08mm paper gauge

8

9 Pull out the paper gauge and check that it is held as before

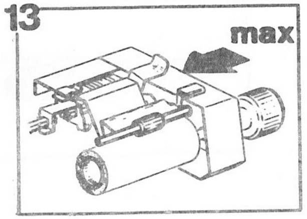
10

11 ⁒ F-14

Note - Repeat the check with all the type bars. Move towards + if the gauge is overheld by platen; towards - if overheld by segment.

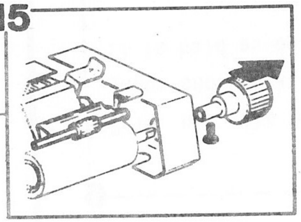
Attention - This check must be carried out simultaneously with the preceeding check.

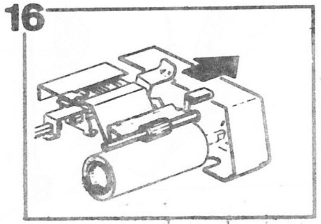
Checking the Ring and Platen clearance (continued)

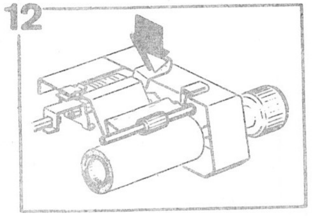


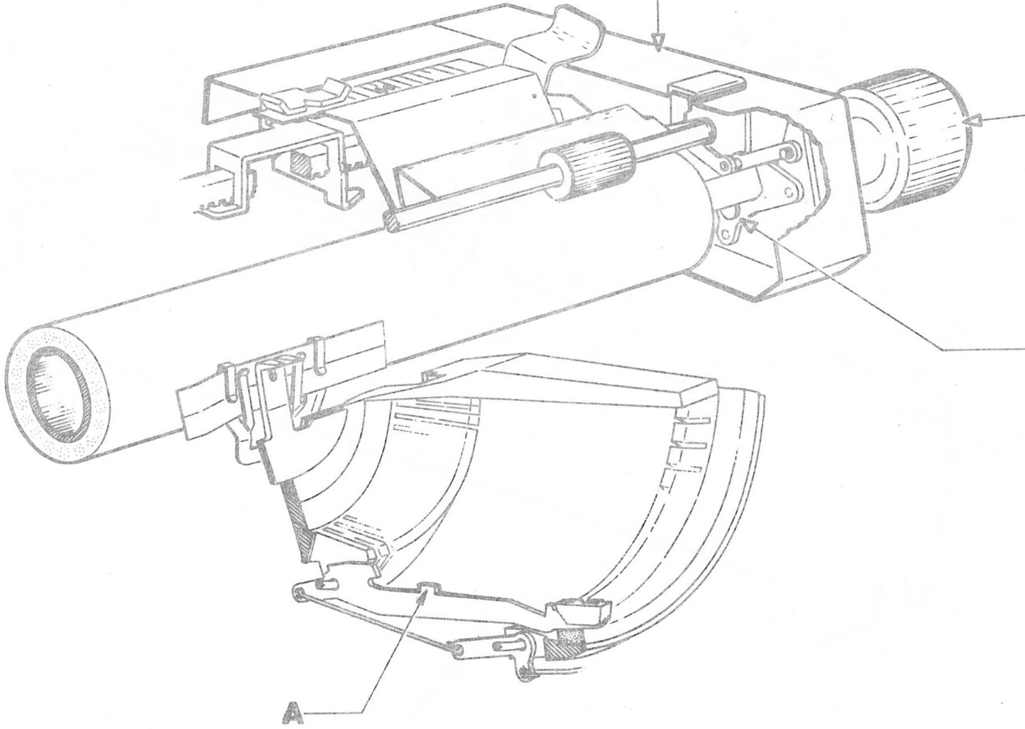
14

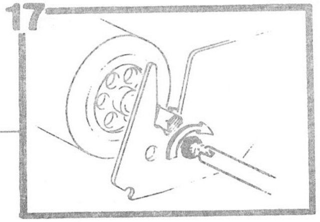
Repeat the same operations as on page F-13 starting from panel 2 to 9







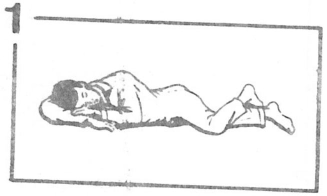


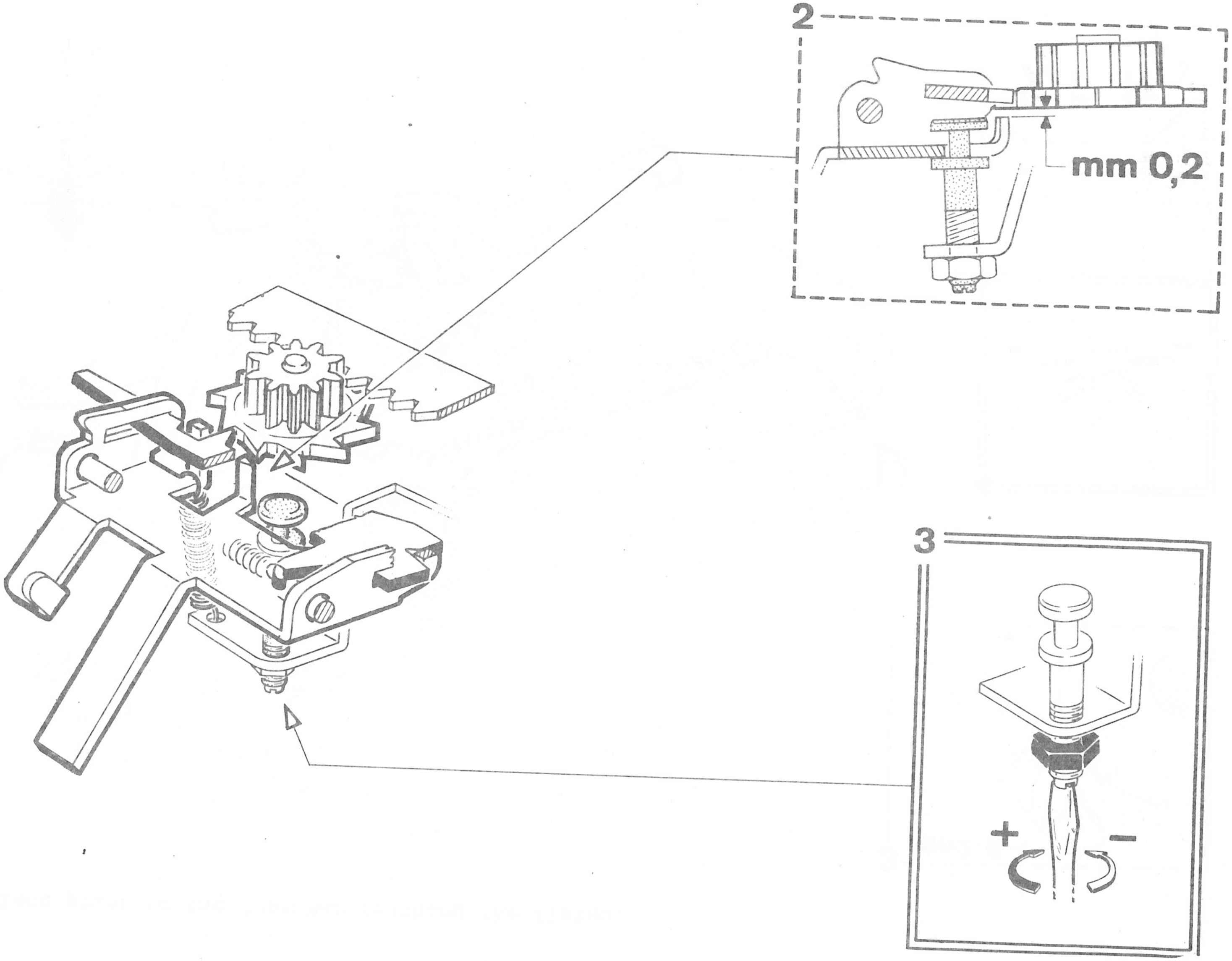


Note - Repeat check with all the other type bars. Possible stopping differences can be eliminated by filing or peening Lug A of the Type Bar.

③ Checking the rest position of the Fixed Dog

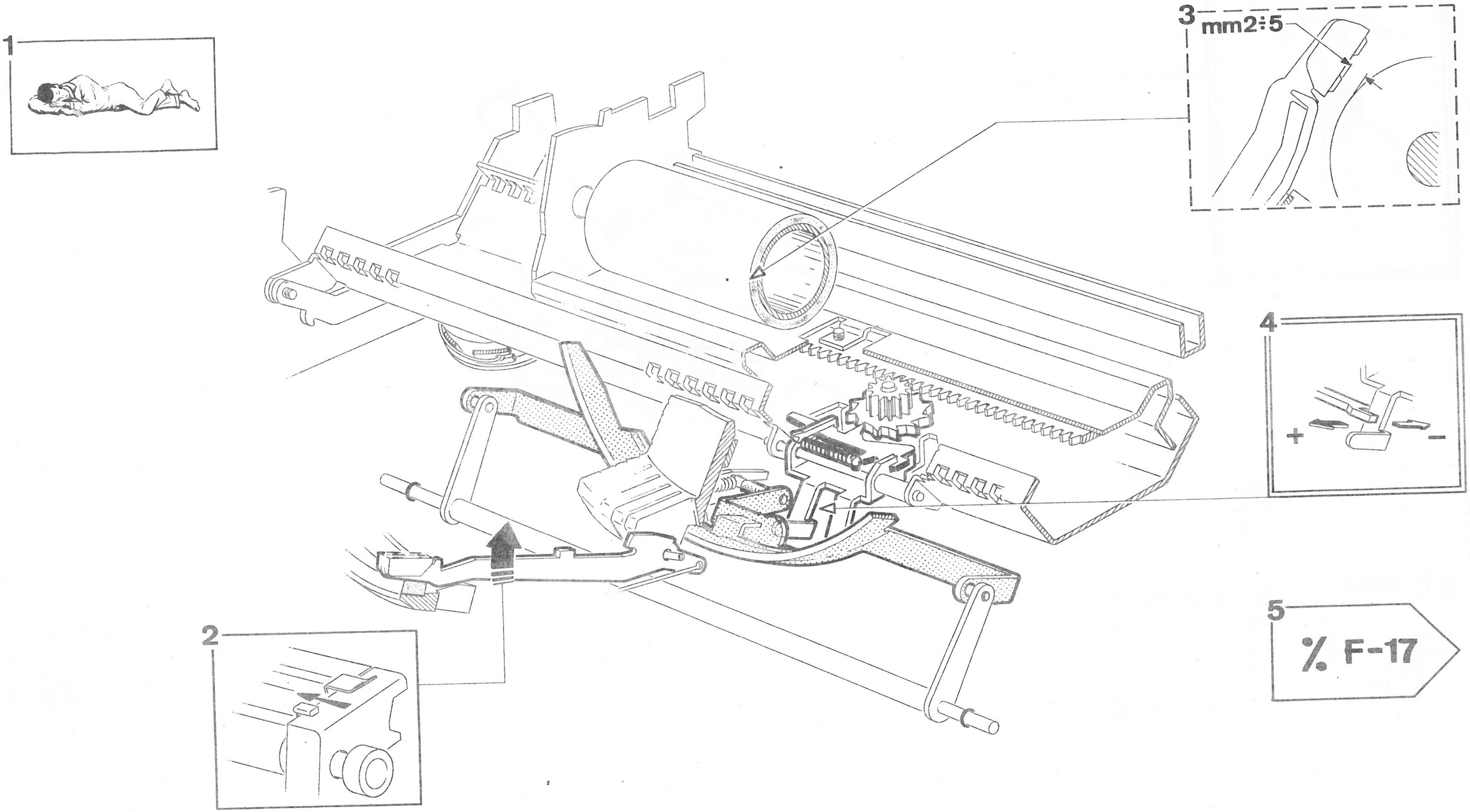
At rest, the condition illustrated on page F-9 (upper panel) must be checked.





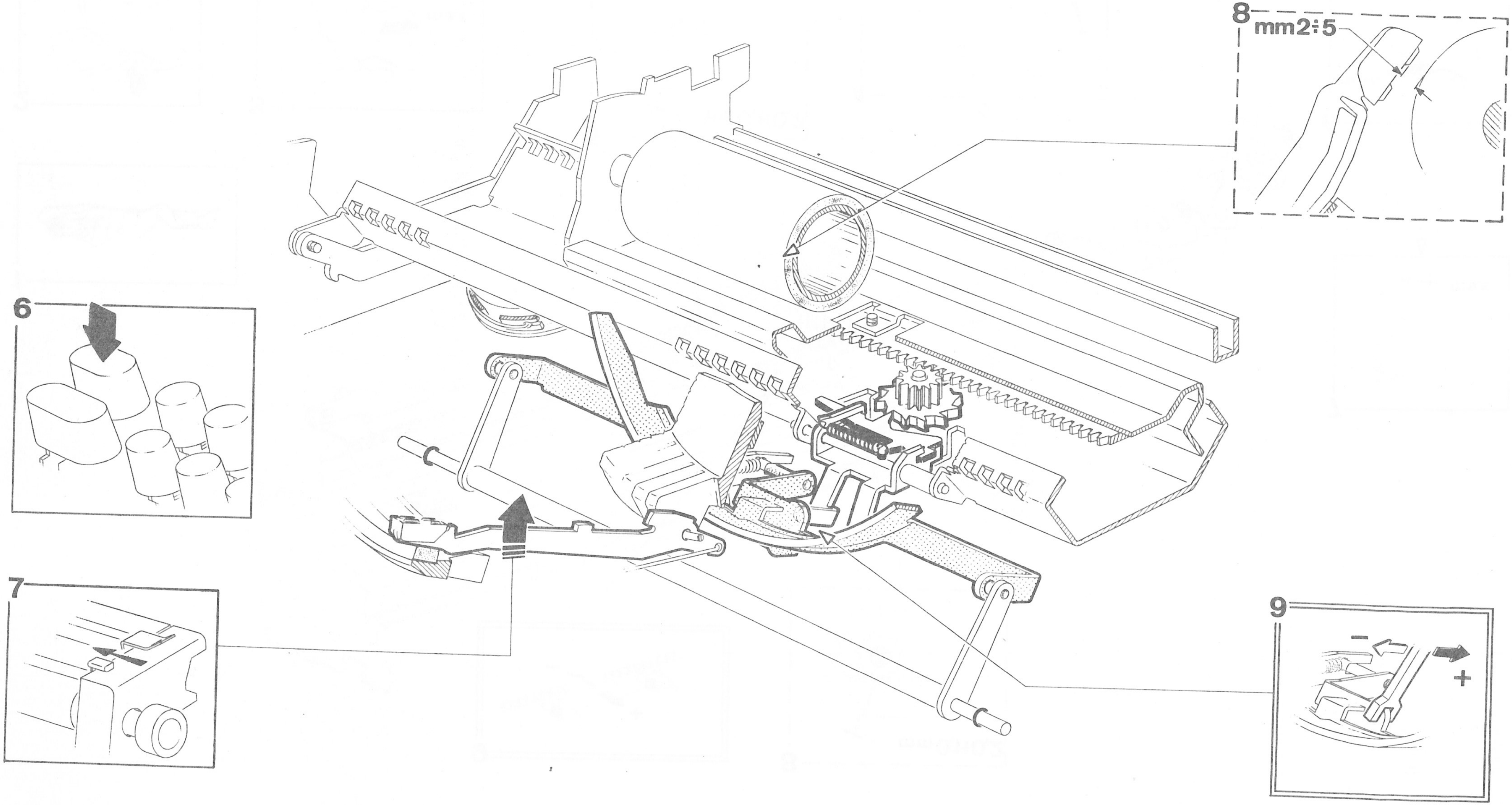
④ Checking the Escapement Trip

The Escapement Trip must take place prior to the Type Bar reaching the Platen.



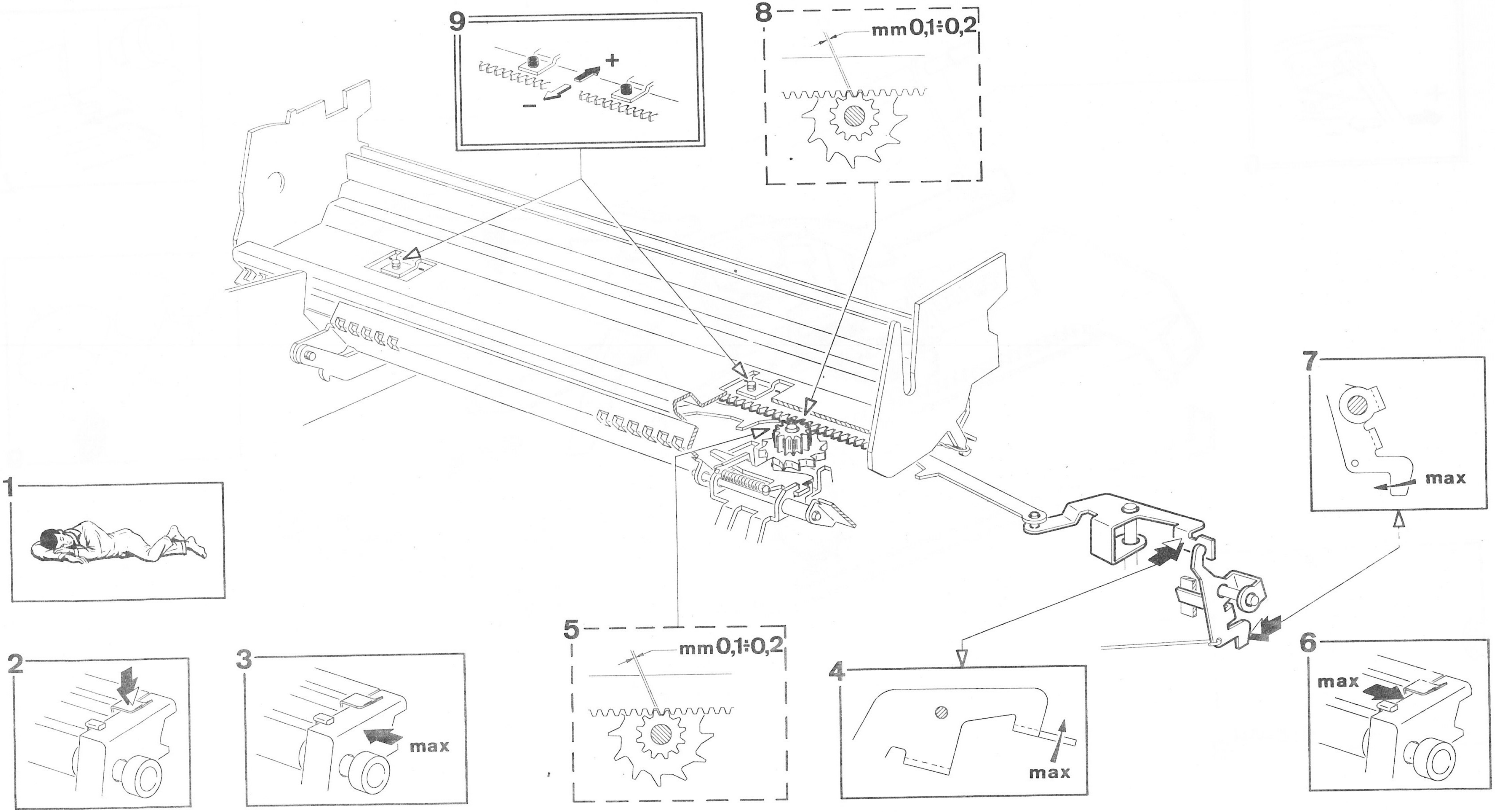
Note - Repeat check with a few end and central Type Bars.

Checking the Escapement Trip (continued)

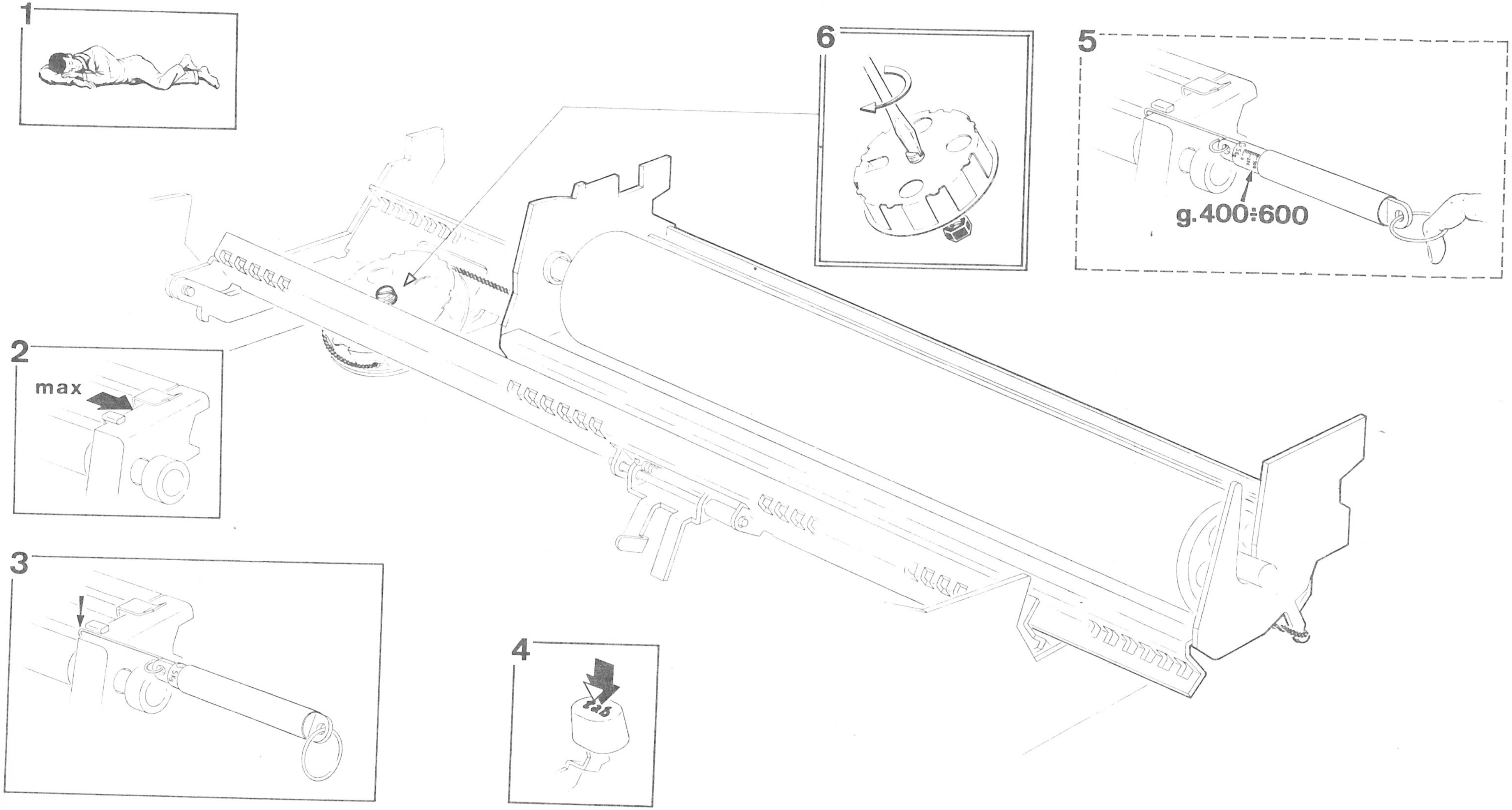


Note - Repeat check with a few end and central Type Bars.

⑤ Checking the meshing between the Escapement Rack and Escapement Wheel


9
+
−
8
mm0,1÷0,2
7
max
1
2
3
max
5
mm0,1÷0,2
4
max
6
max

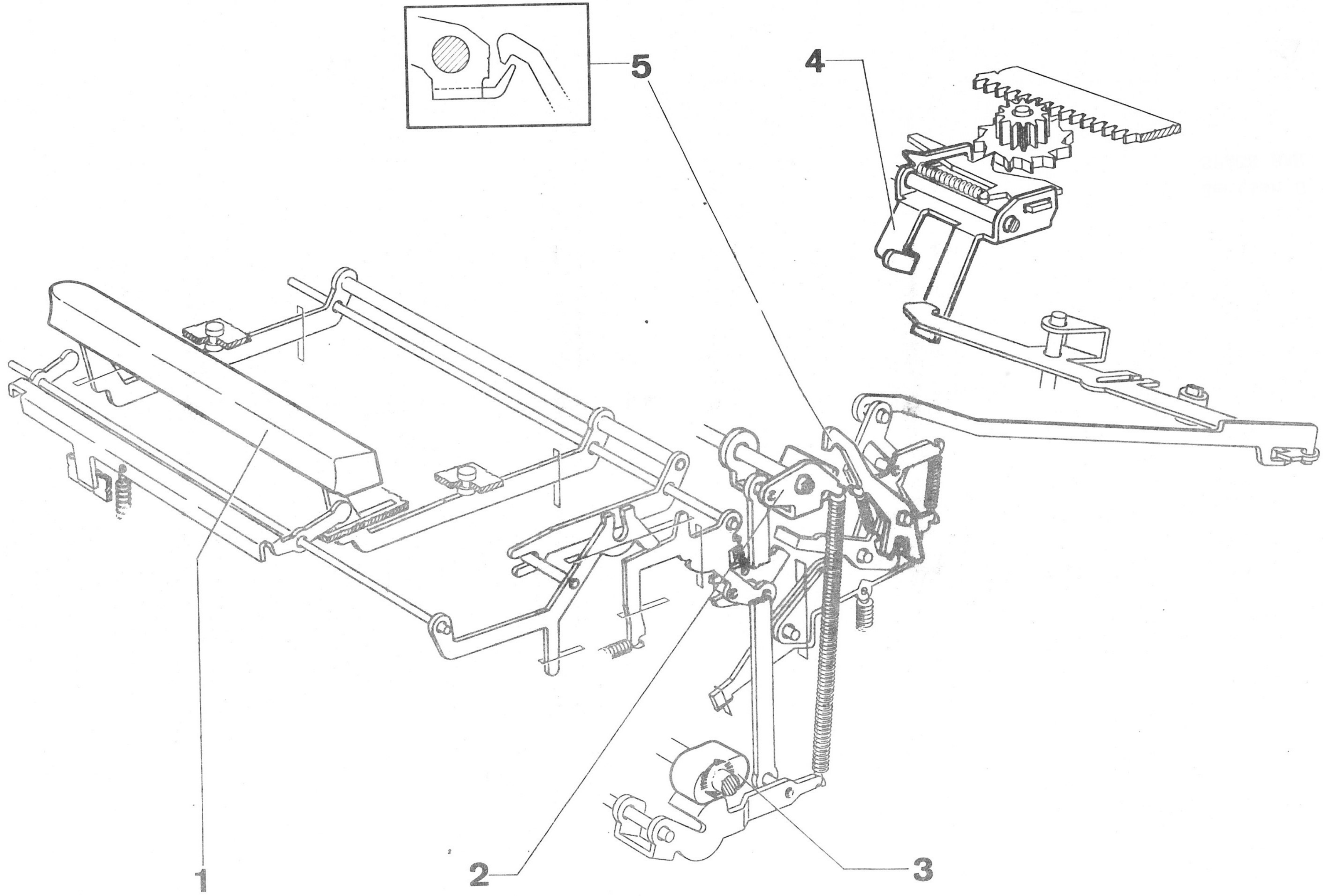
⑥ Checking the Tension of the Carriage Main spring



Note - This check requires use of a tension gauge

Attention - The tension of the spring is obtained by approximately six complete winding turns.

Section G
SPACE BAR



Foreword

When the Space Bar is depressed, the Carriage moves one space towards the left.

Command Mechanism

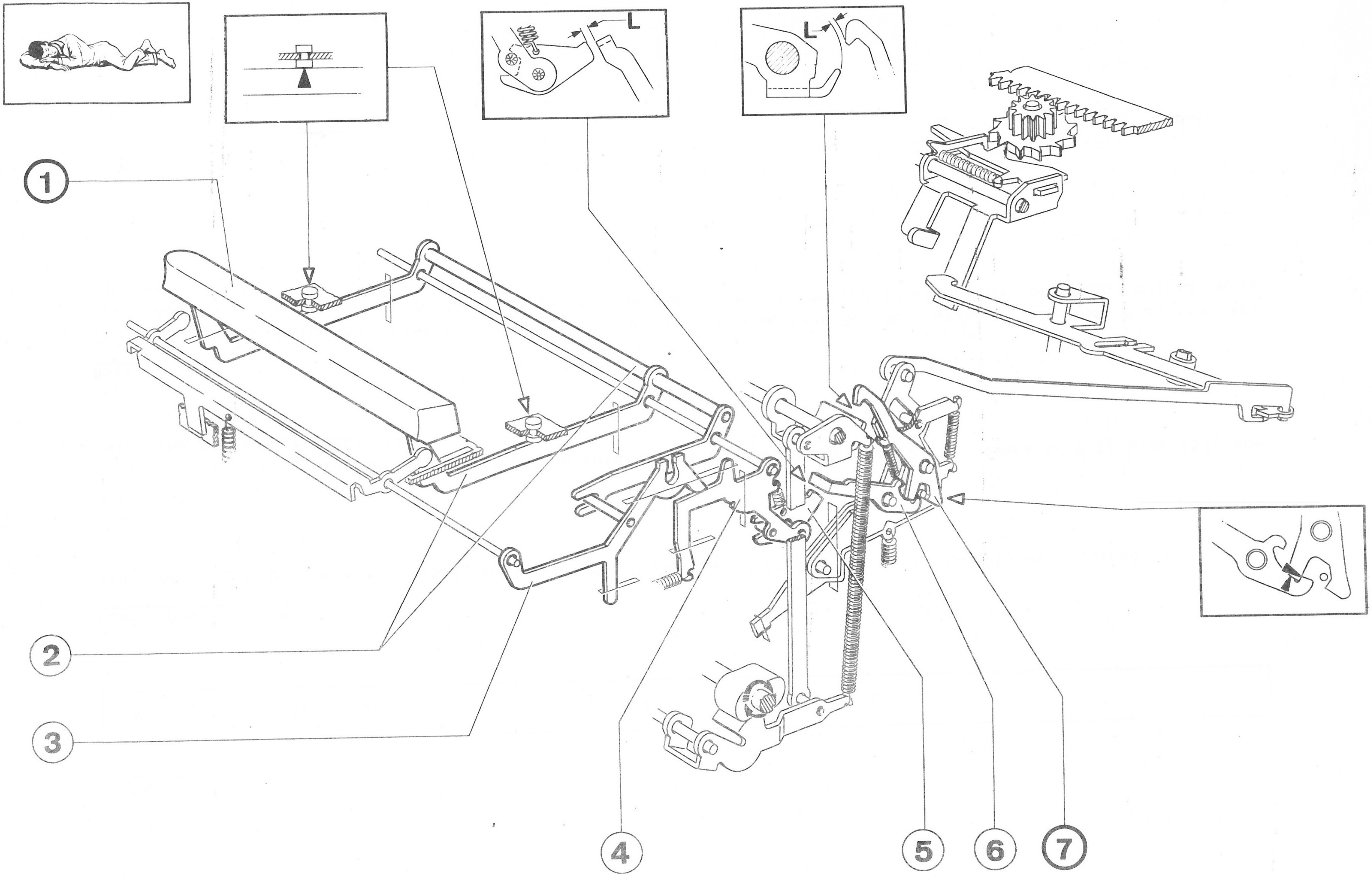
When the Space Bar (1) is depressed, Pull Link (5) engages with Bridge (2) which oscillates continuously.

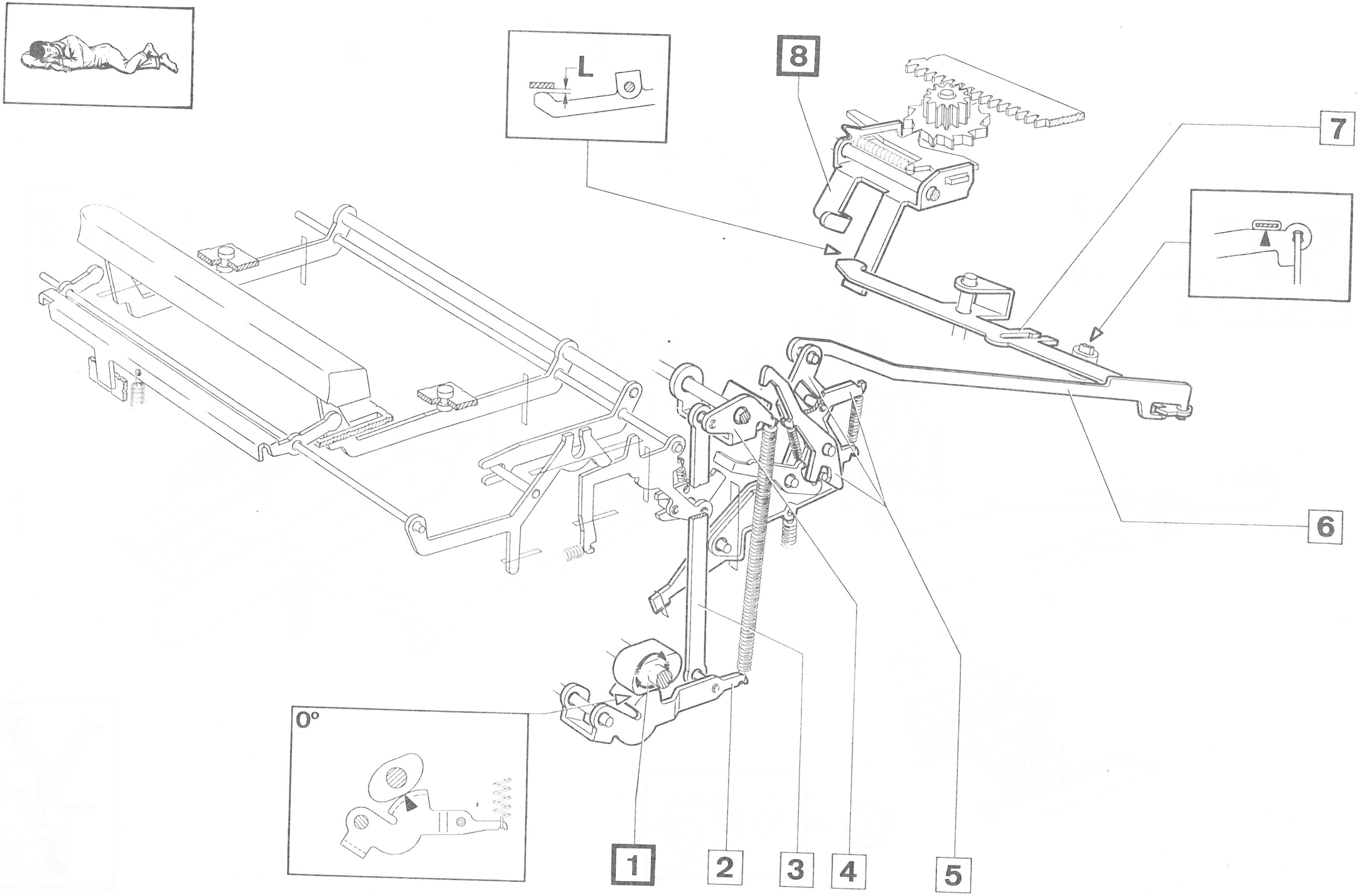
Work Mechanism

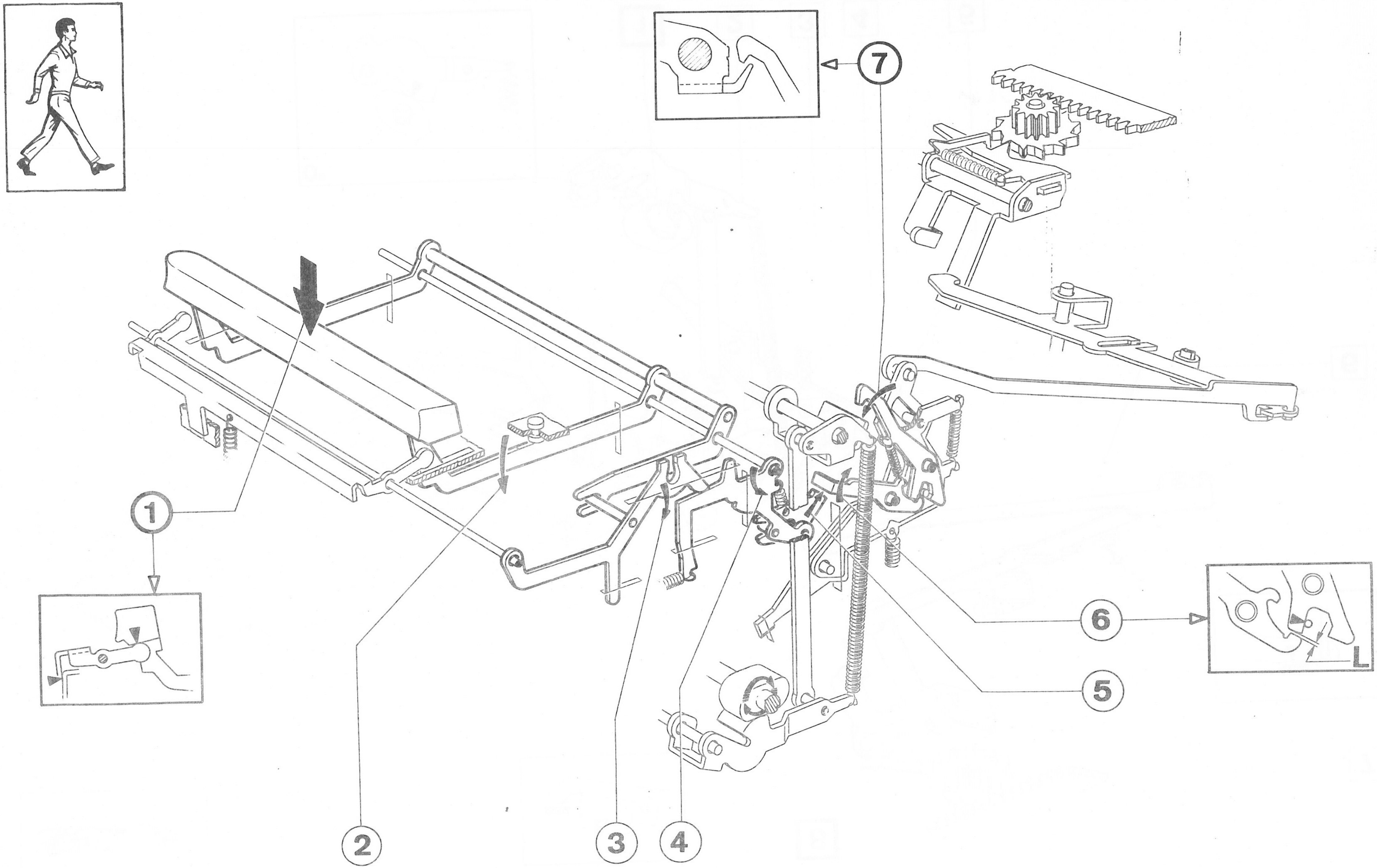
During a complete revolution of Cam (3) (which rotates continuously), Bridge (2), by means of Pull Link (5), rotates the Escapement Rocker (4).

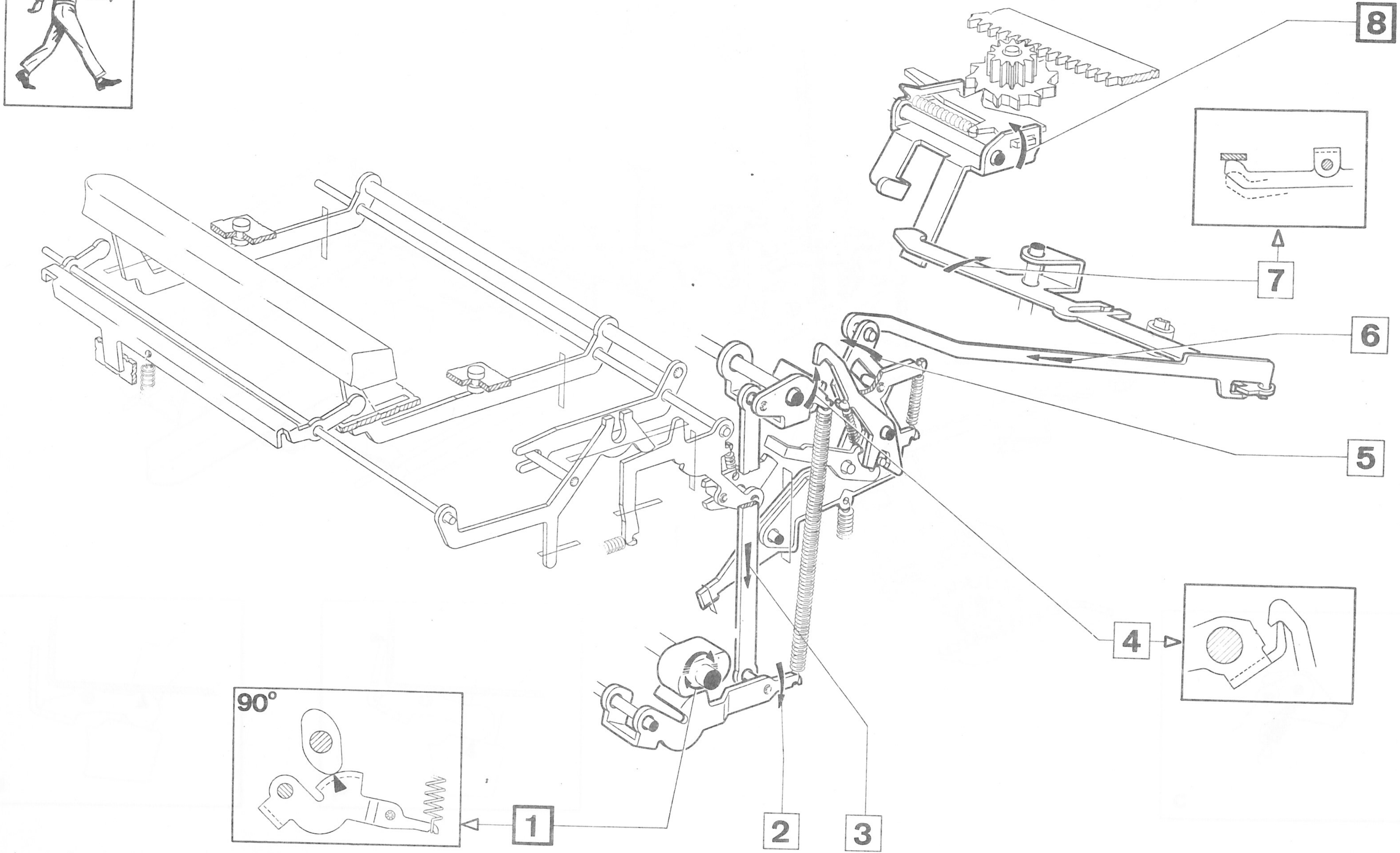
Note

The Bell Crank on which Pull Link (5) is mounted is similar to the Type Bar Bell Cranks. This indicated that the Space Bar Mechanism is subject to deactivation by the same types of locking to which the printing mechanism is subject.

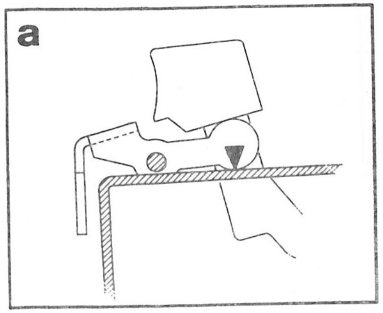

L
L

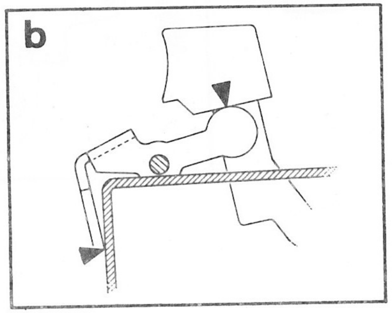

L
0°

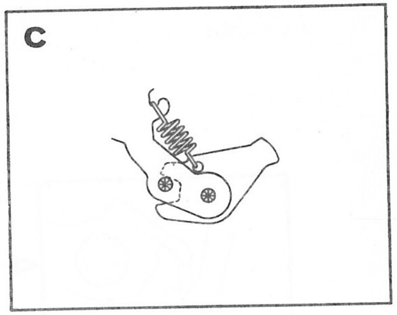

L

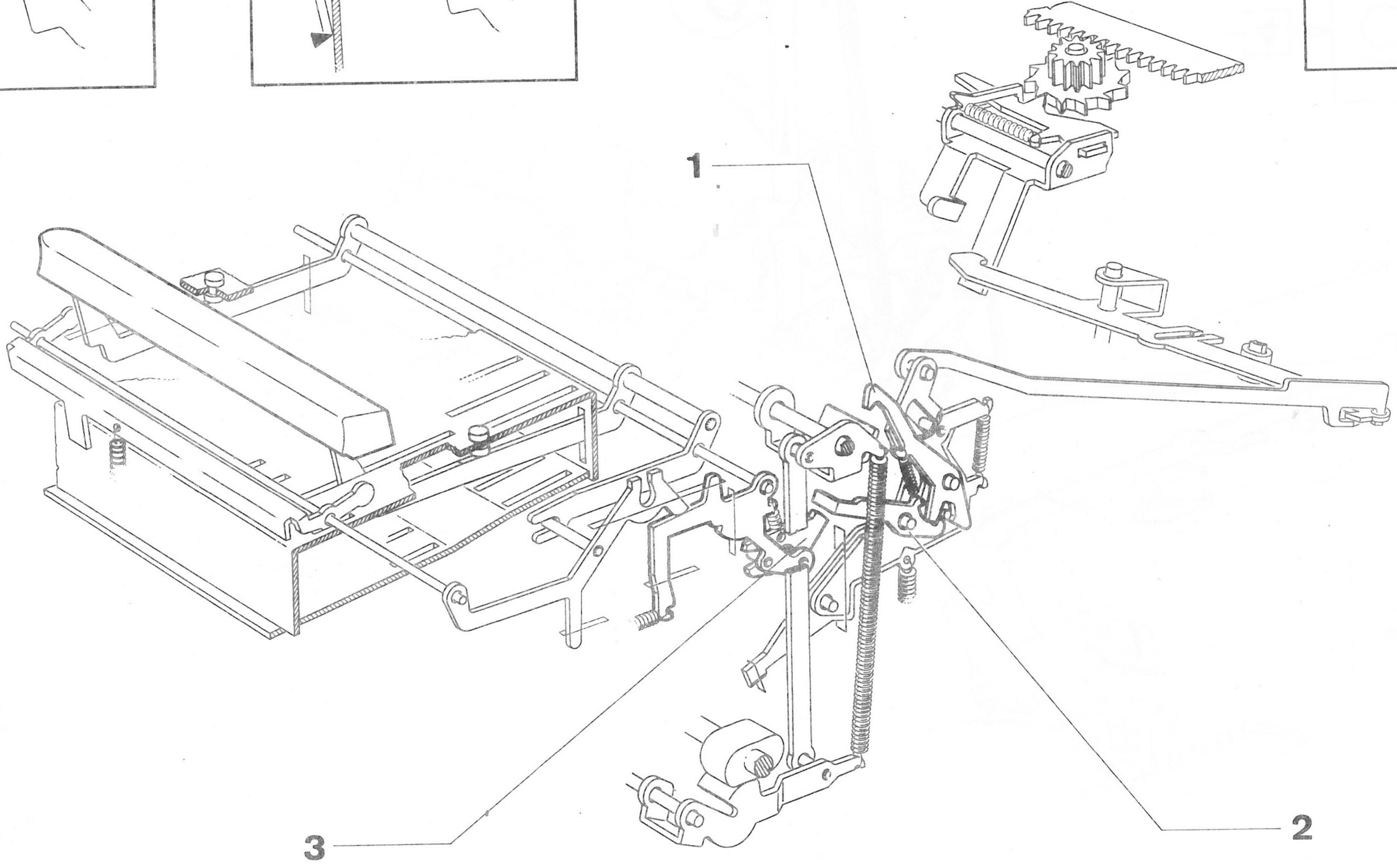


Note : During the next 90° rotation of the Cam, the same motions take place, however, in the opposite direction to the one illustrated.


a


b


c



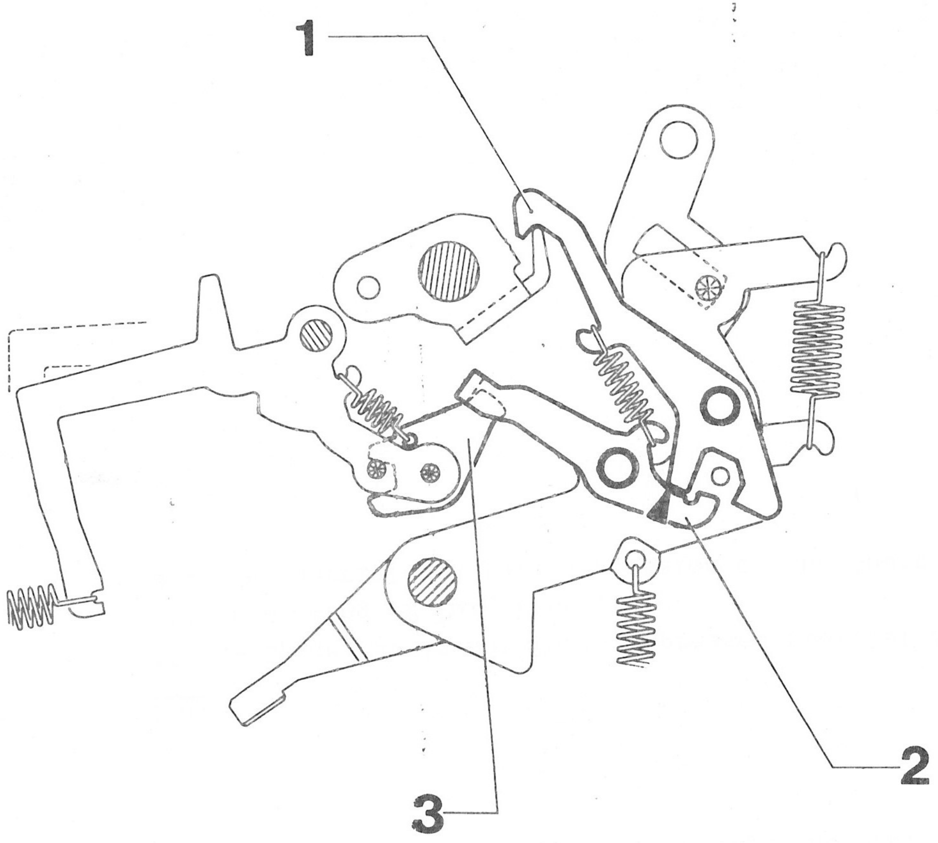
Repeat Spacing

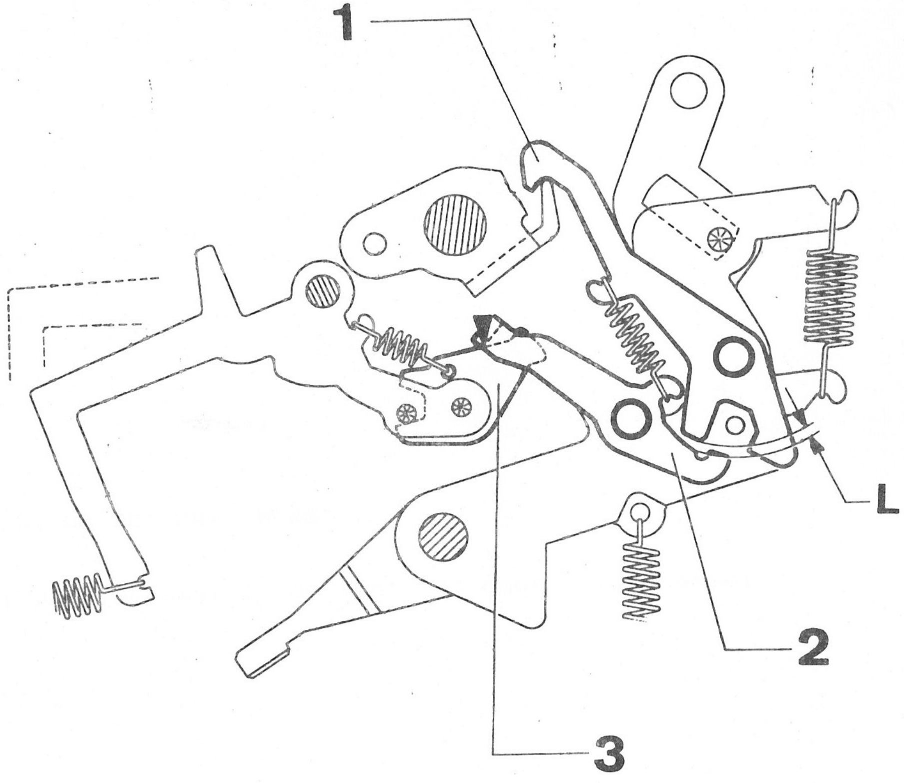
If the Space Bar is fully depressed and held down the machine continuously spaces until the Space Bar is released.

Repeat spacing works in the same manner as the Repeat Character Keys:
(i.e. by preventing the relatching of the Pull Link (1) with Latch (2) when the Space Bar is fully depressed (see detail a). This is accomplished through the profile of Pawl (3) (see detail c).

Note

If the Space Bar is not fully depressed (partial depression: detail b), the profile of Pawl (3) does not prevent the relatching of Pull Link (1).
Both the partial and full depression of the Space Bar are illustrated on the next page.





Partial depression (single spacing)

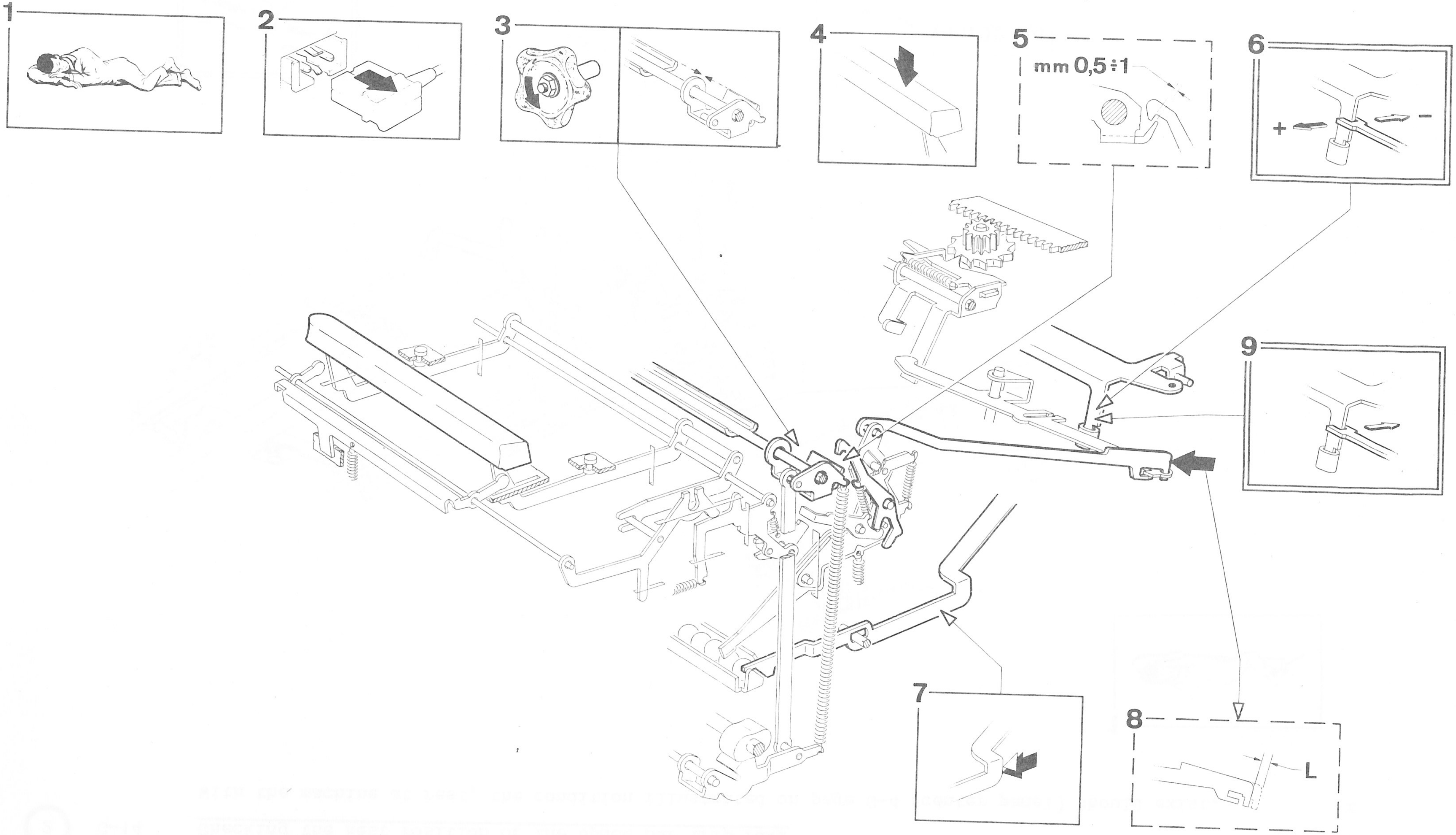
Pull Link (1) is normally held by Latch (2). Pawl (3) does not change the angular position of the Latch (2).

Full Depression (repeat spacing)

Pull Link (1) is not relatched by Latch (2) due to the special profile of Pawl (3).

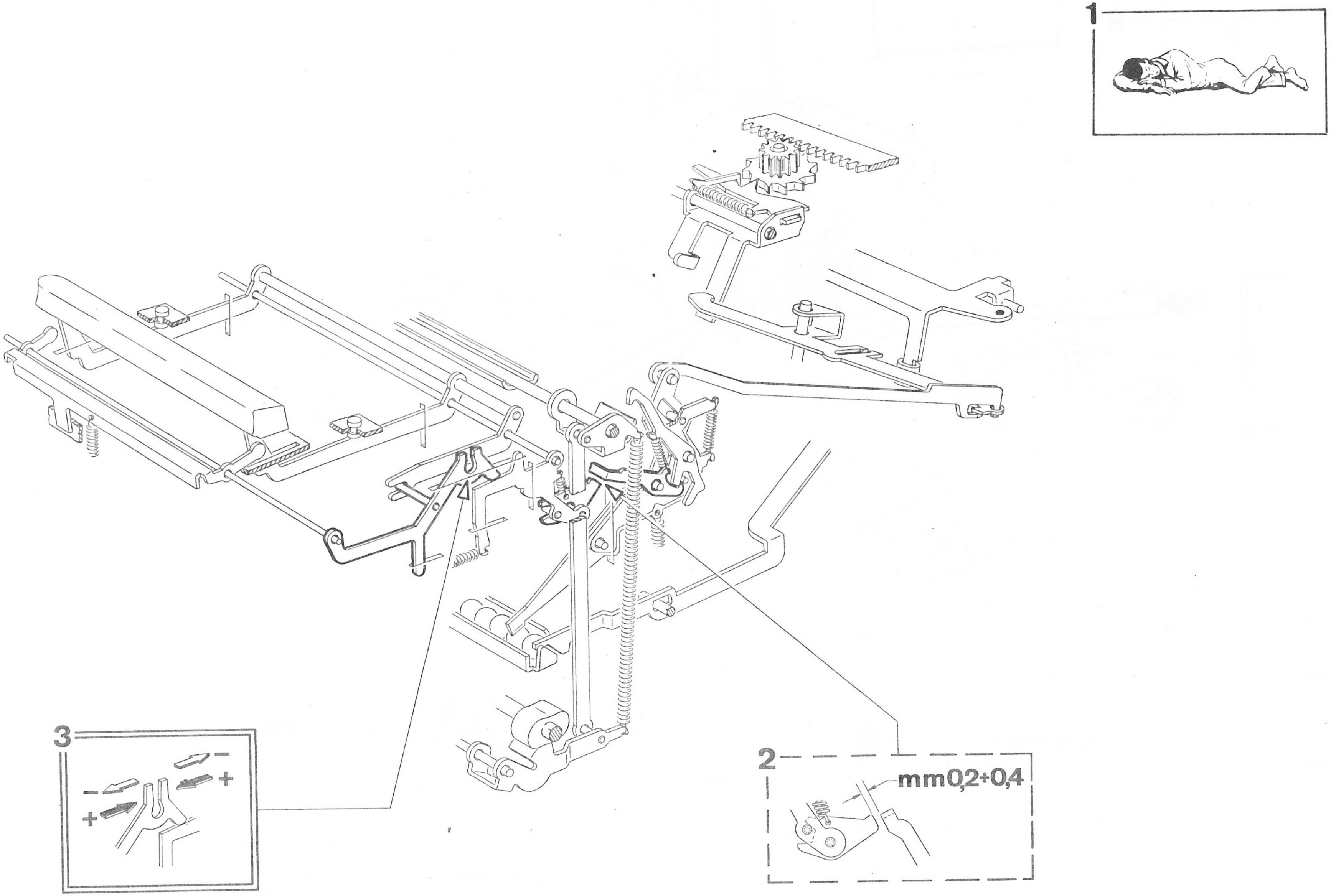
① Checking the Rest Position of the Space Bar Bell Crank

With the machine at rest, the condition illustrated on page G-5 (right panel) must take place.


1
2
3
4
5
mm 0,5÷1
6
+
-
9
7
8
L

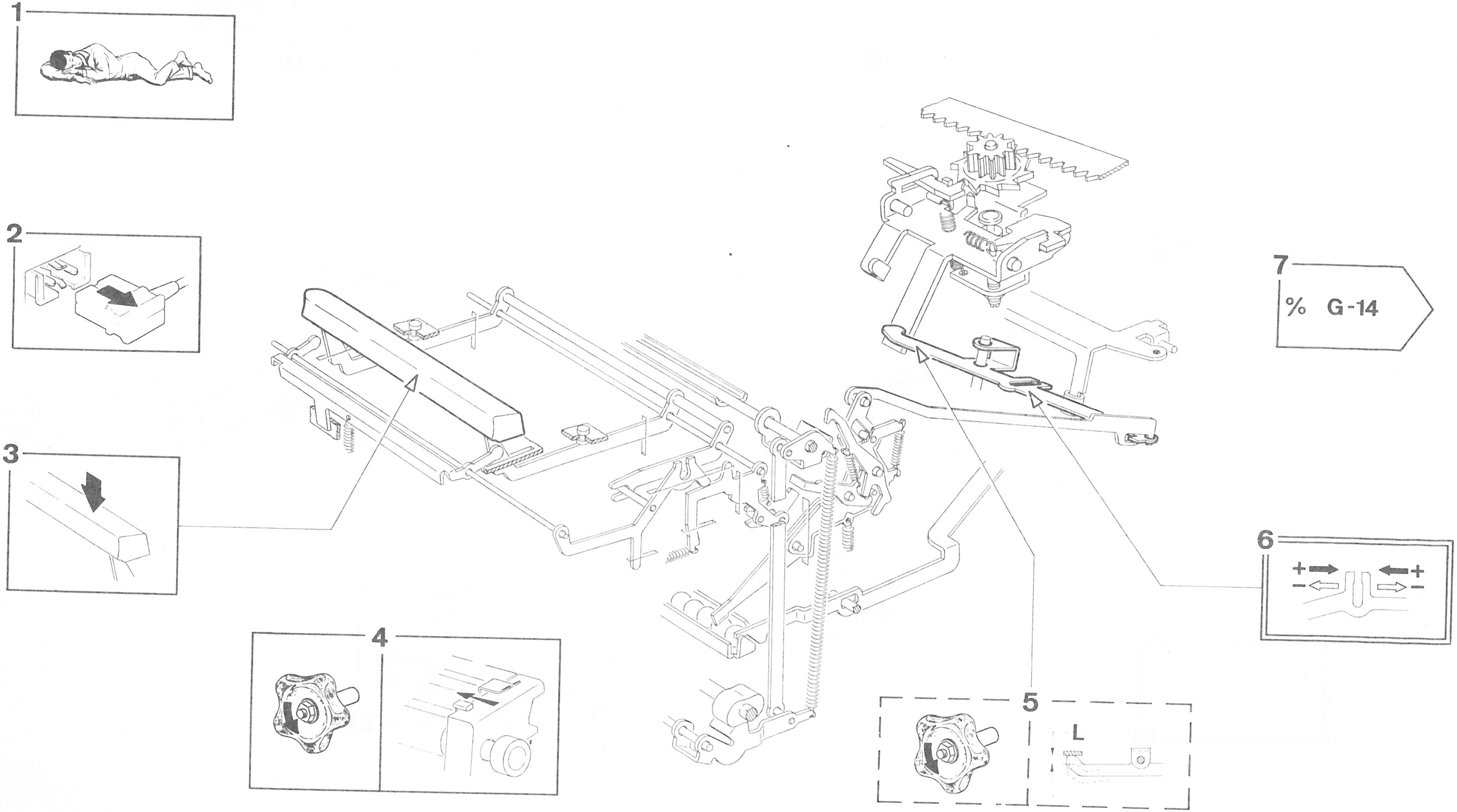
② G–14 Checking the Rest Position of the Space Bar Trip Pawl

With the machine at rest, the condition illustrated on page G–4 (center panel) should exist.

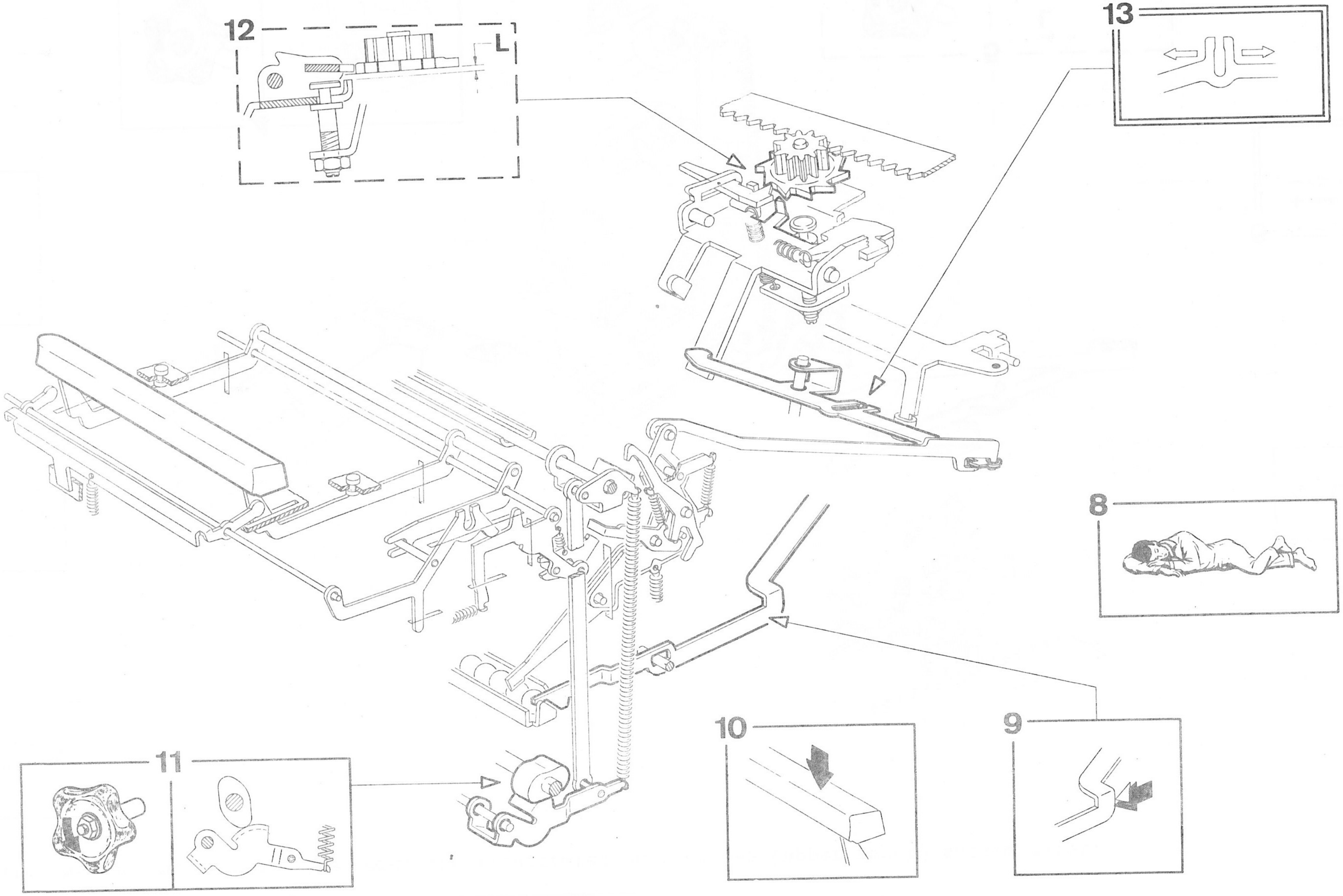


③ Checking the Position of the Escapement Control Lever

With the machine at rest, the condition illustrated on page G-5 (upper panel) should exist.



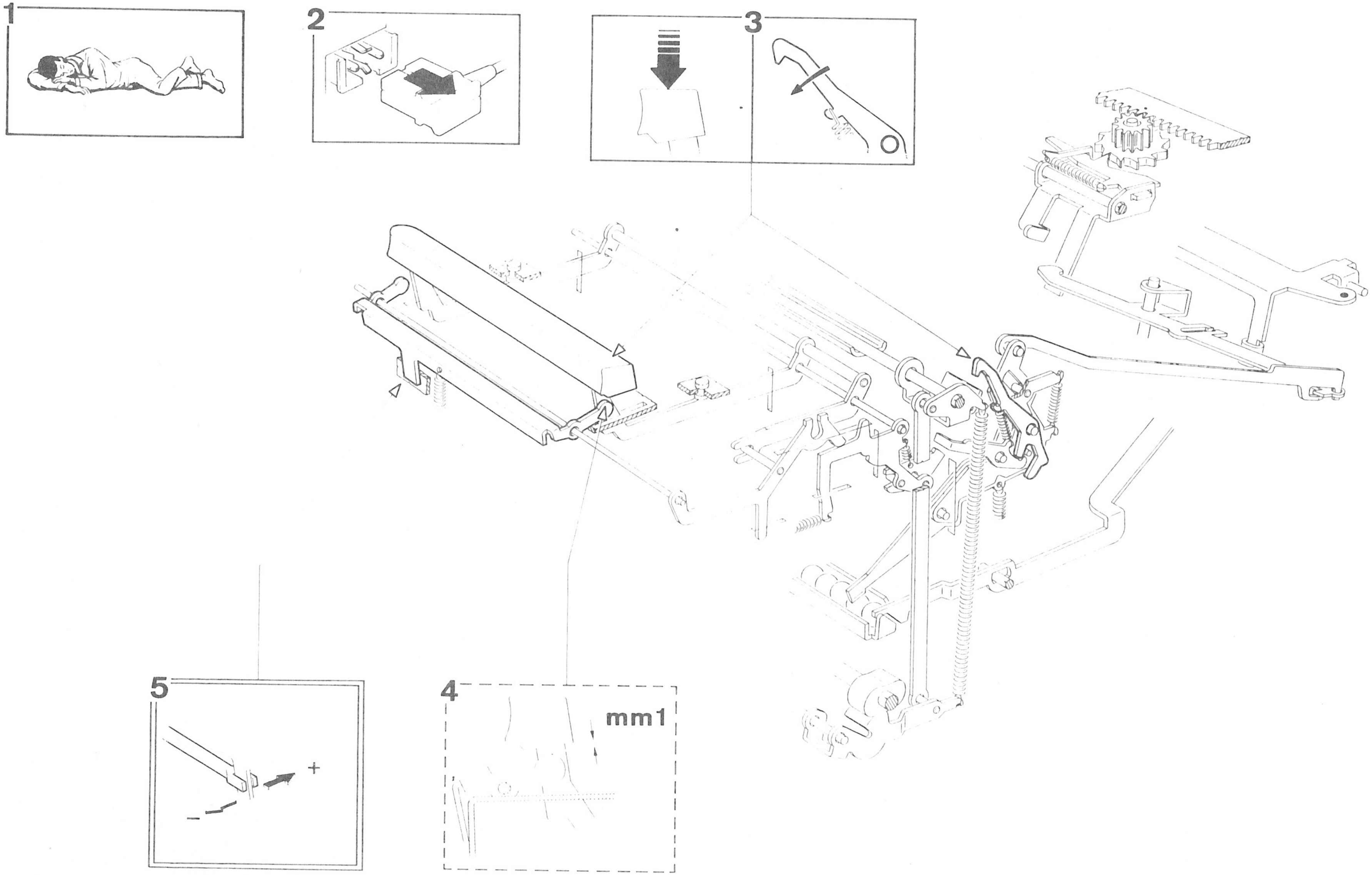
Checking the Position of the Escapement Control Lever (continued)


12
L
13
8
11
10
9

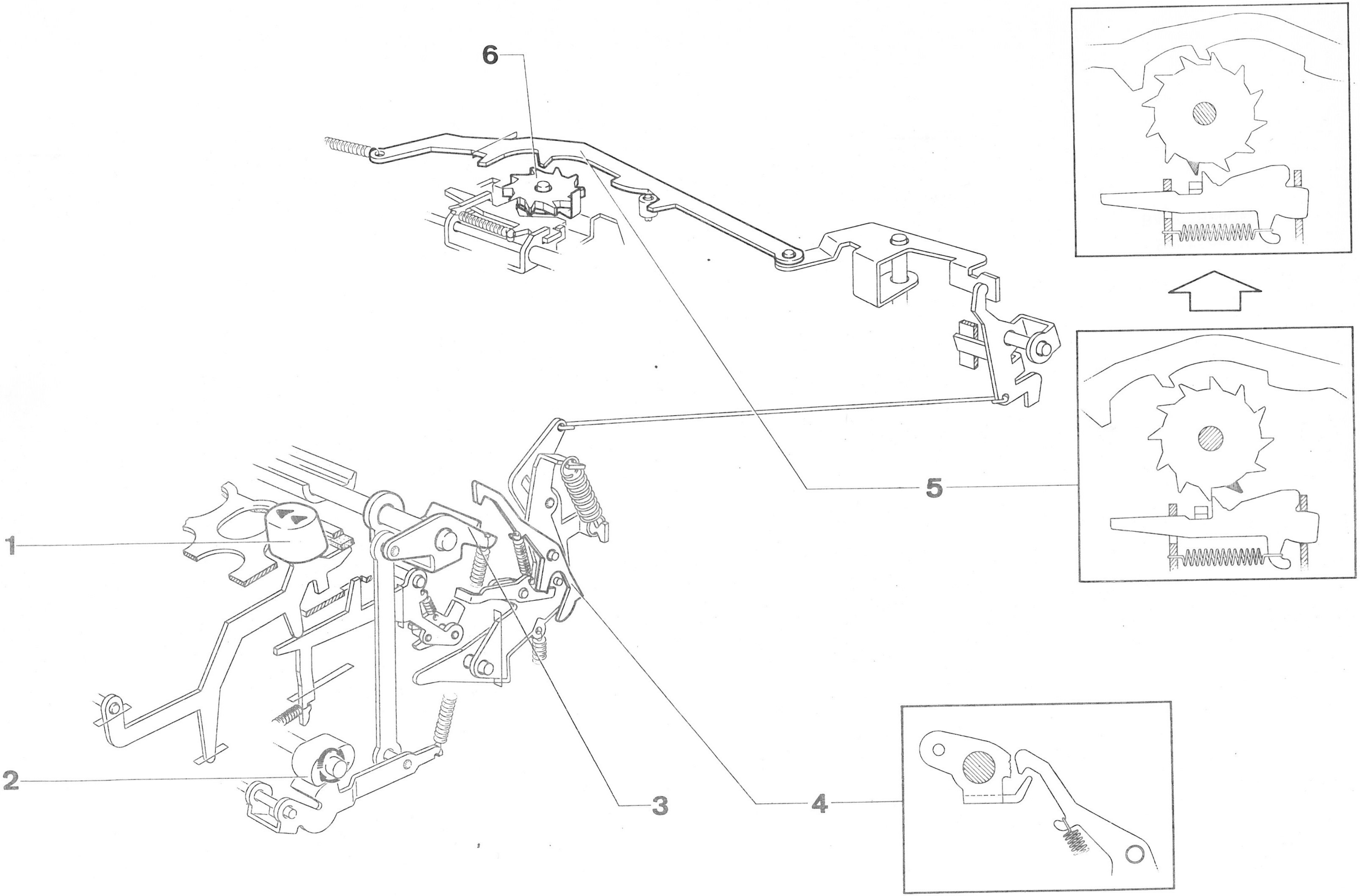
G-12 ④

Checking the Position of the Space Bar Repeat Bail

By depressing the Space Bar normally, the following must take place in this order: 1) Empty Travel; 2) Release of the Pull Link; 3) Extra travel, prior to Space Bar contacting the Repeat Bail.



Section H
BACK SPACE



Foreword

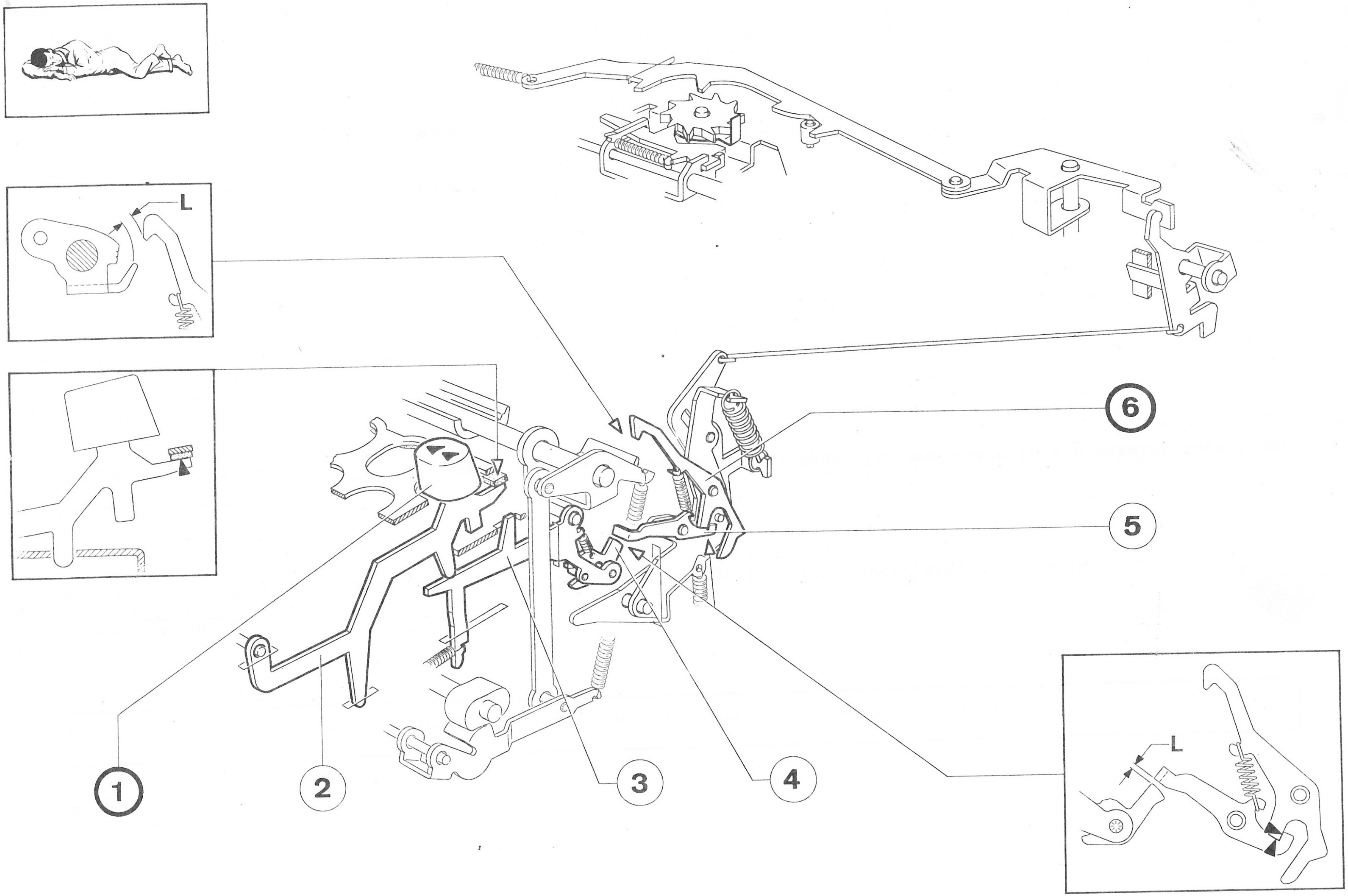
When the Back Space Key is depressed the Carriage moves one space towards the right.

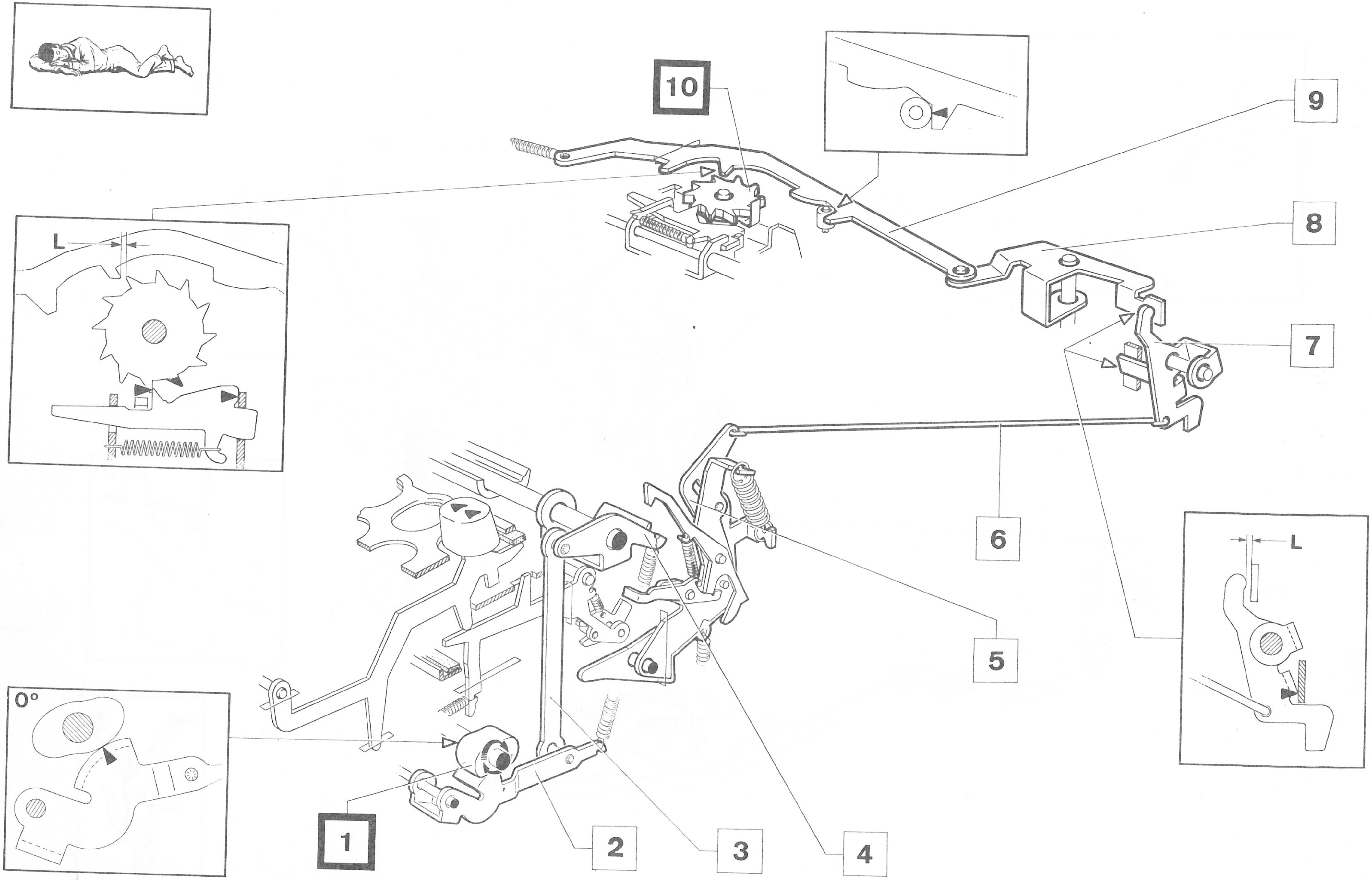
Command Mechanism

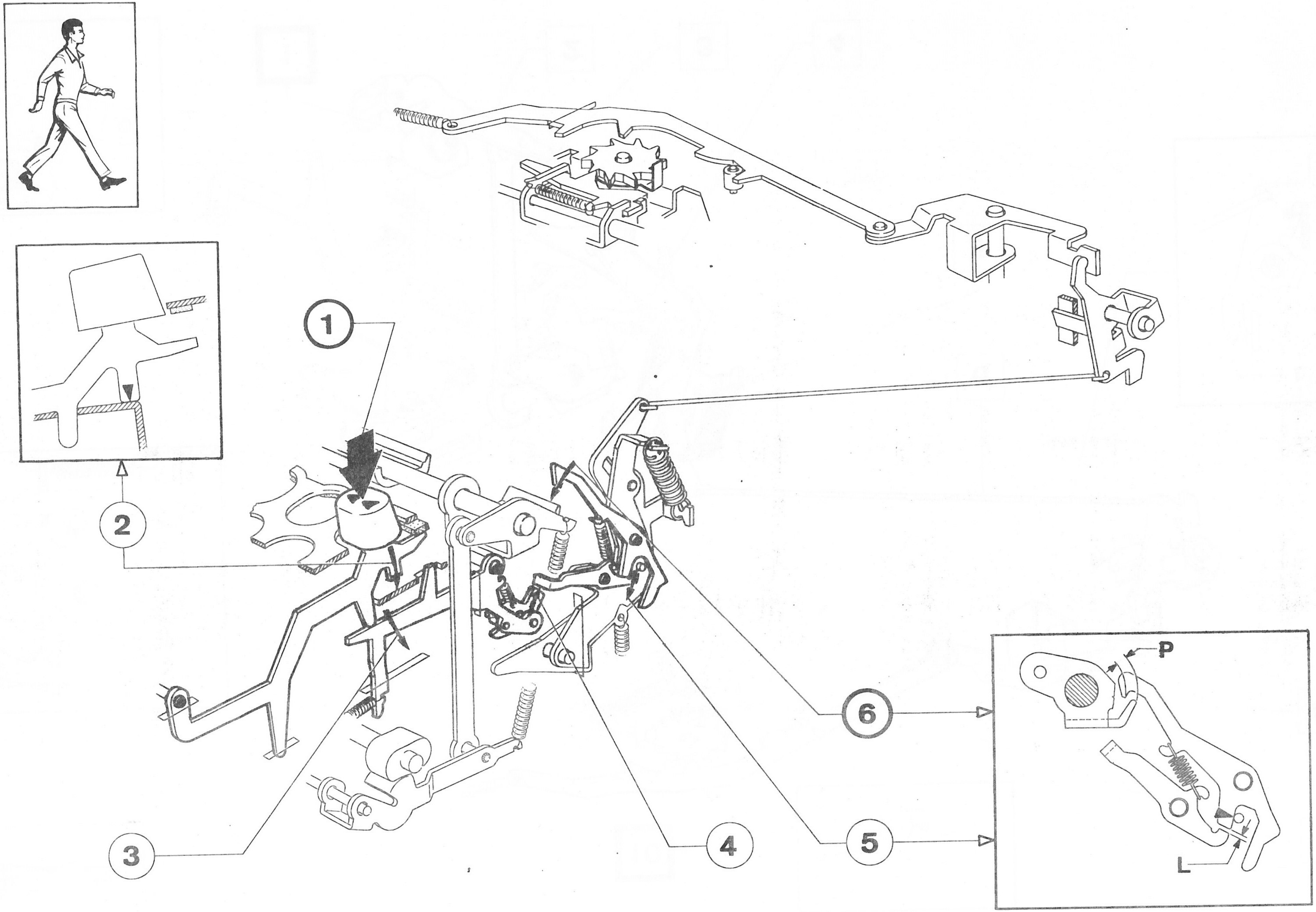
When key (1) is depressed, Pawl (4) gets in the path of Bridge (3) which oscillates continuously.

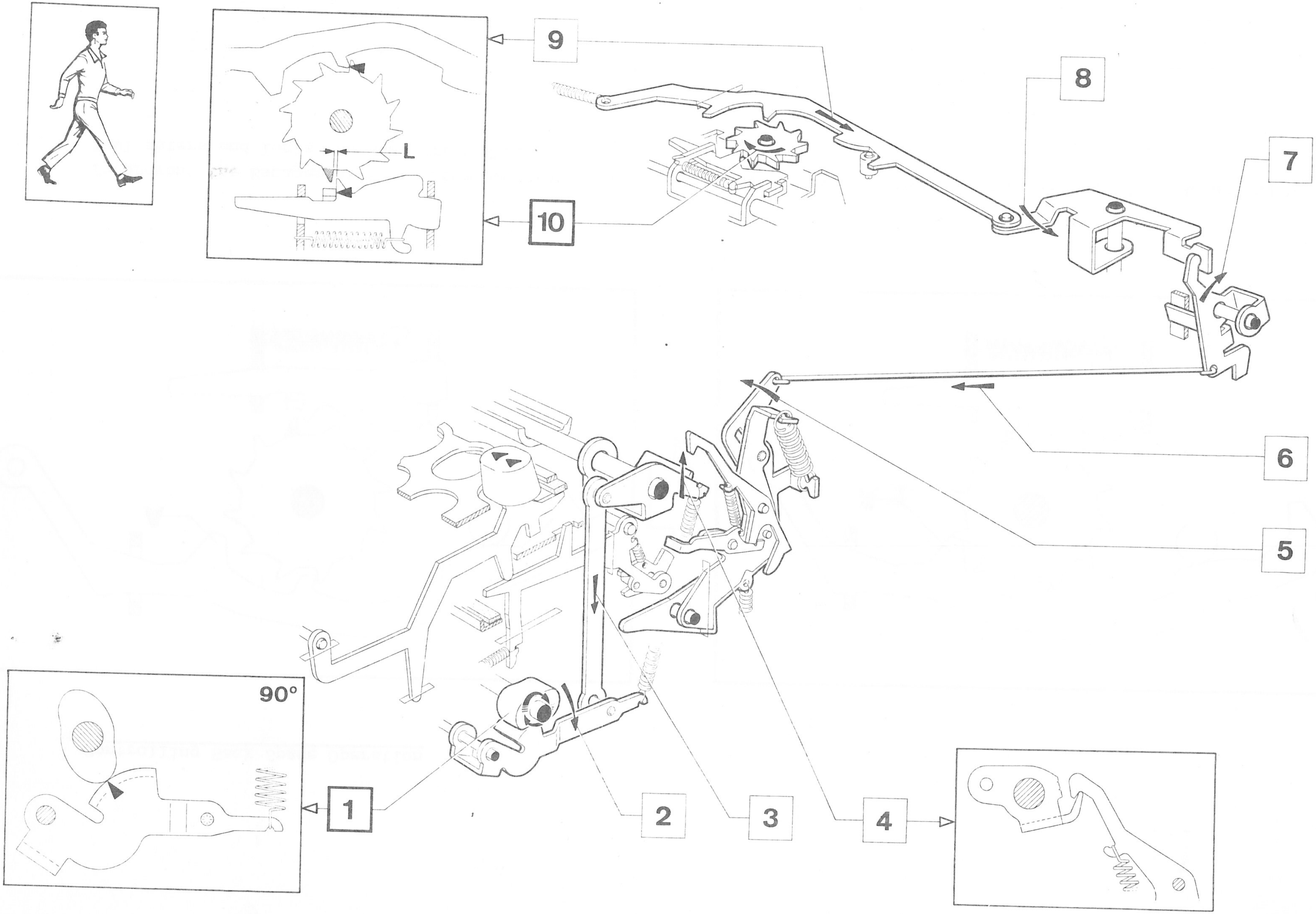
Operation Mechanism

During the 90° rotation of Cam (2), Pawl (5) rotates the Escapement Wheel (6) one space in a clockwise direction.

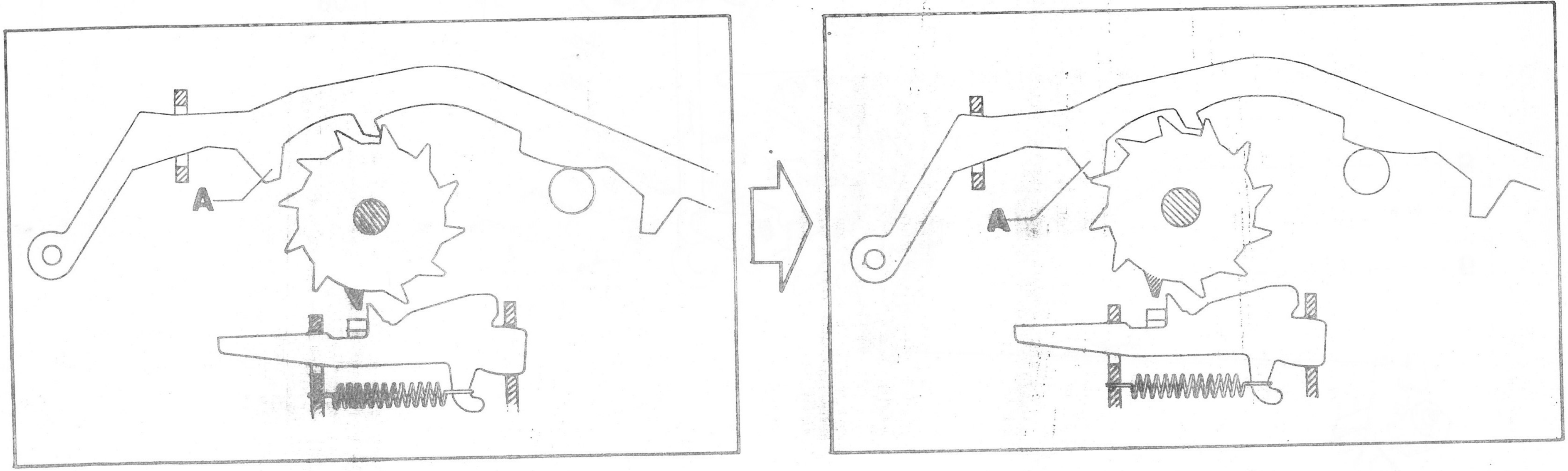

L
L


L
L
0°


P
L


L
90°

Controlling Back Space Operation

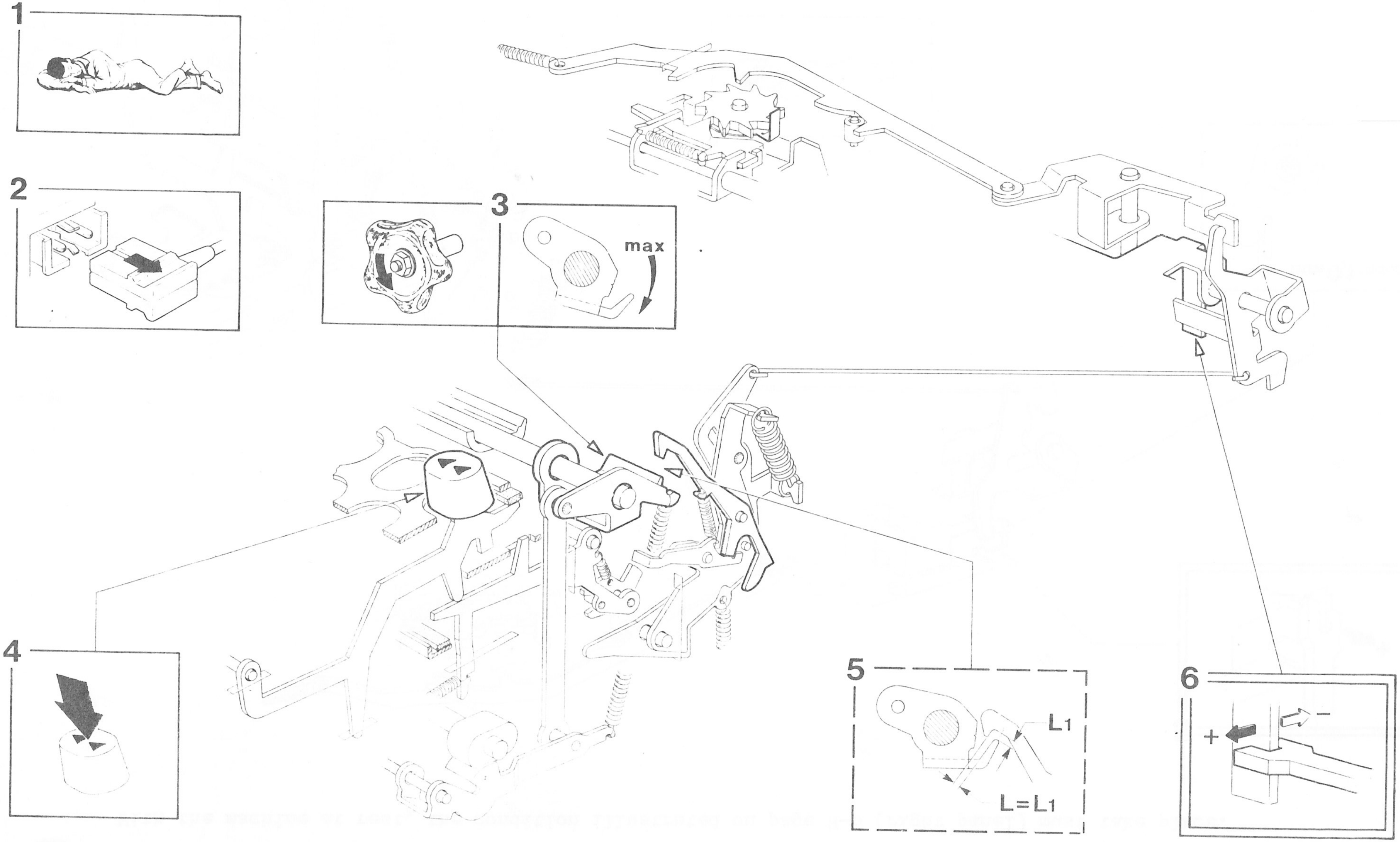


To prevent the Escapement Wheel from backspacing the Carriage more than one space, extension (A) of the Actuating Pawl enters and locks the Escapement Wheel.

① H-10

Checking the Rest Position of the Back Space Crank

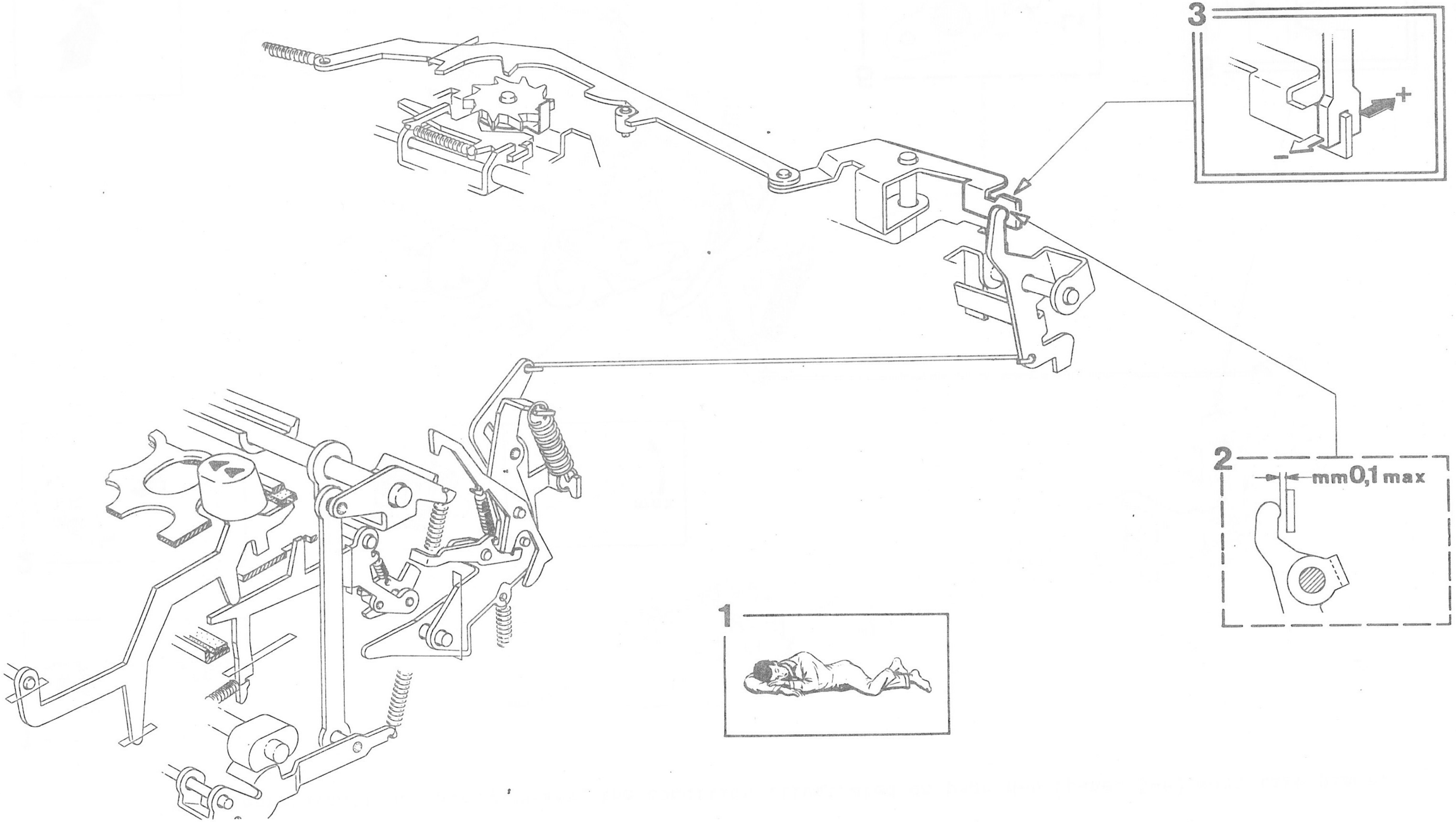
Upon depression of the Back Space key, the condition illustrated on page H-6 (panel 5-6) must take place.



H-9 ②

Checking the Quantity of Back Space

With the machine at rest, the condition illustrated on page H-5 (right panel) must take place.

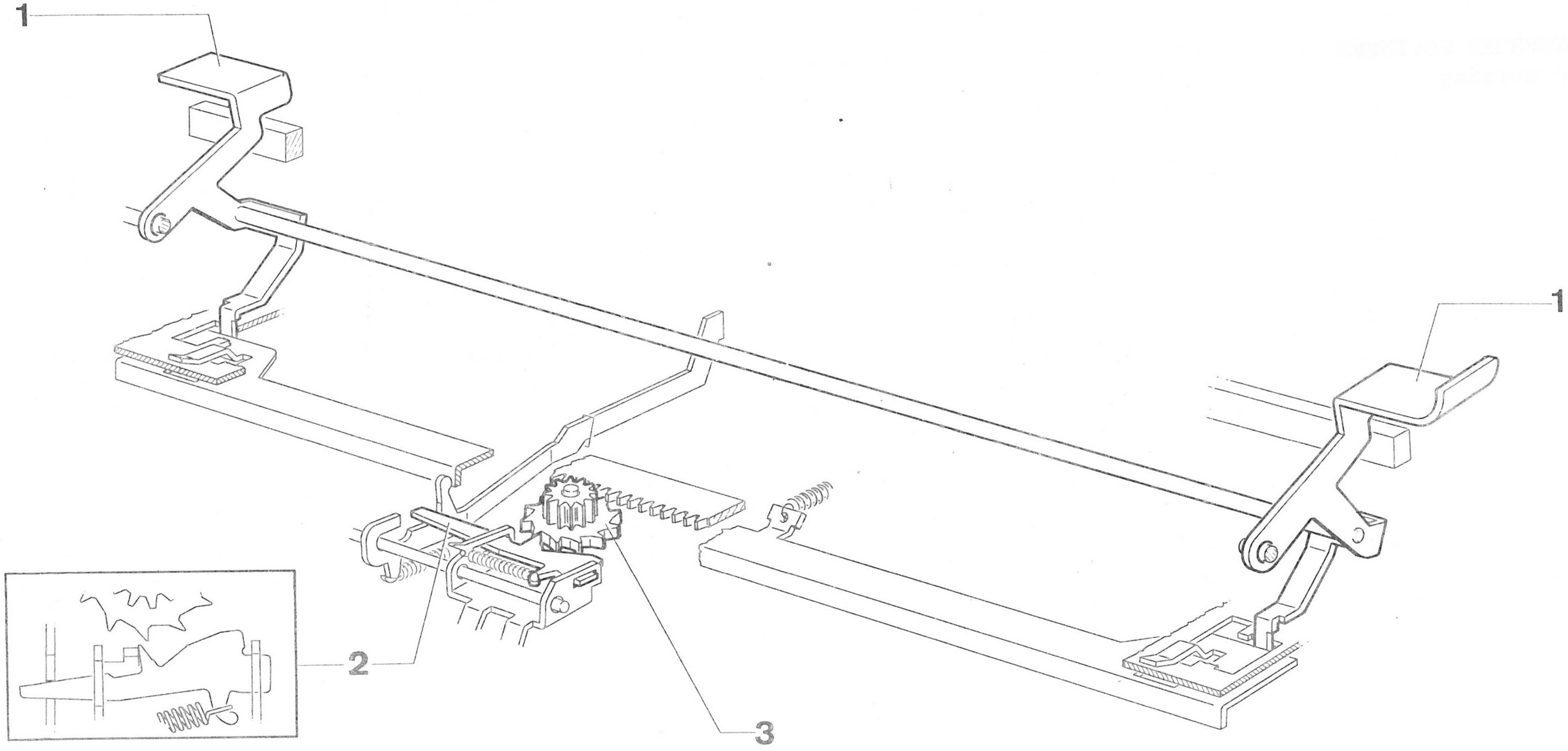


B-20 ③

Checking the Rest Position of the Back Space Trip Pawl

Follow the same procedure shown on page B-20 but referring to the Back Space Trip Pawl.

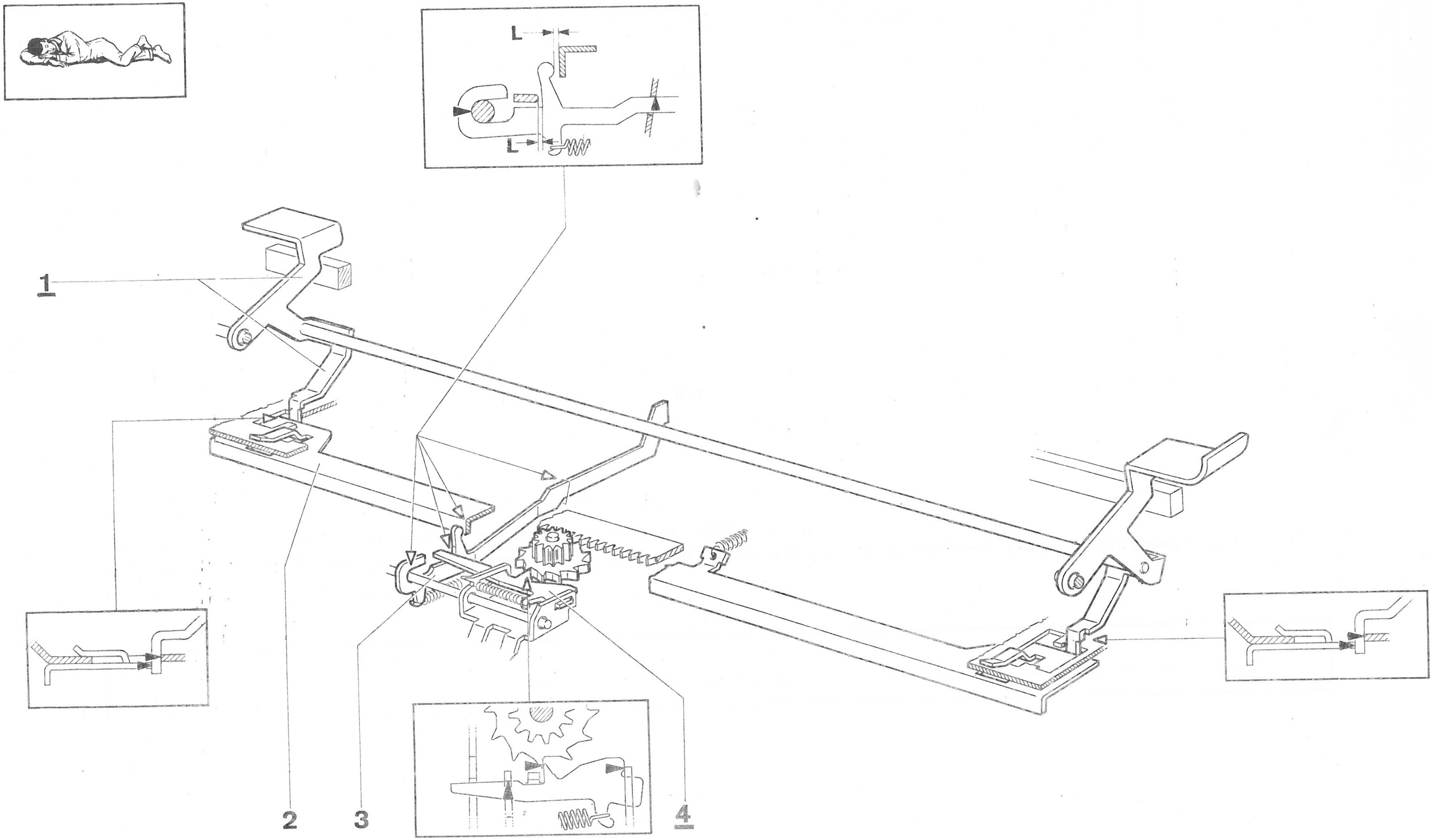
Section J
CARRIAGE RELEASE

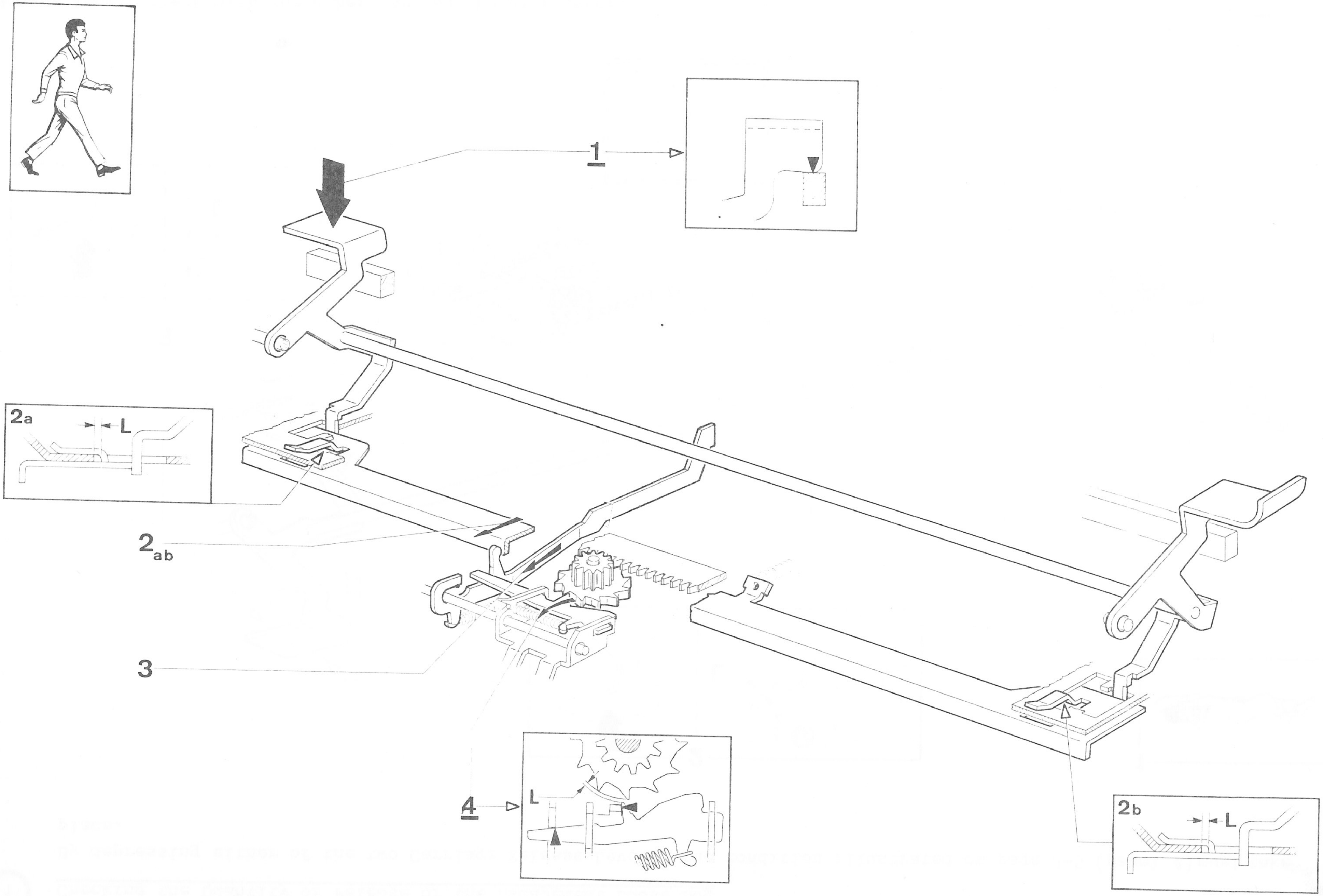


Foreword

When holding either one of the two Carriage Release Levers down, the Carriage can be moved to the right or to the left as desired.

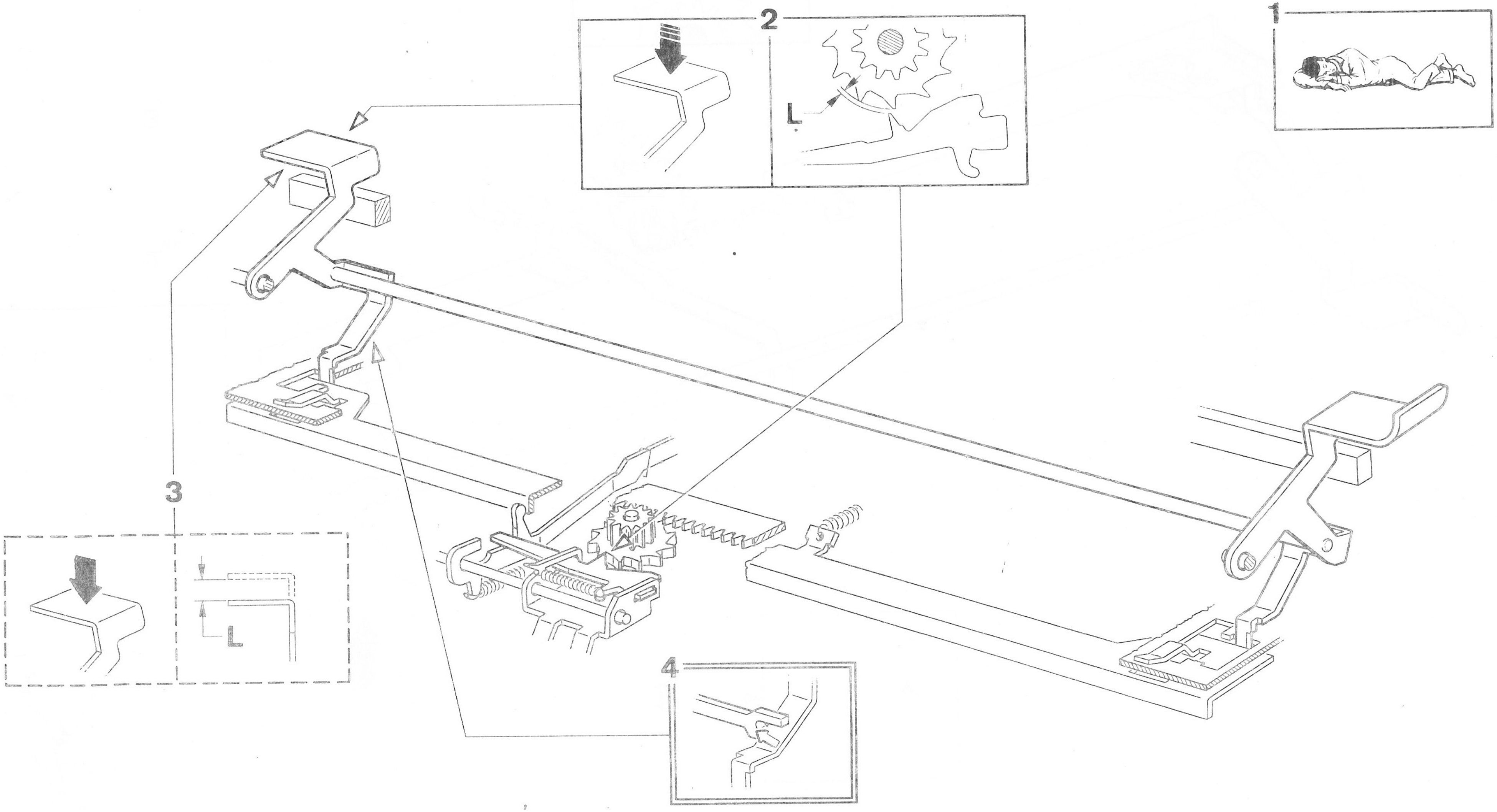
When holding down either one of the two Levers (1), the Loose Dog (2) is disengaged from the Escapement Wheel (3), therefore, the Carriage is free to travel in any direction.


L
L


1
2a
L
2ab
3
4
L
2b
L

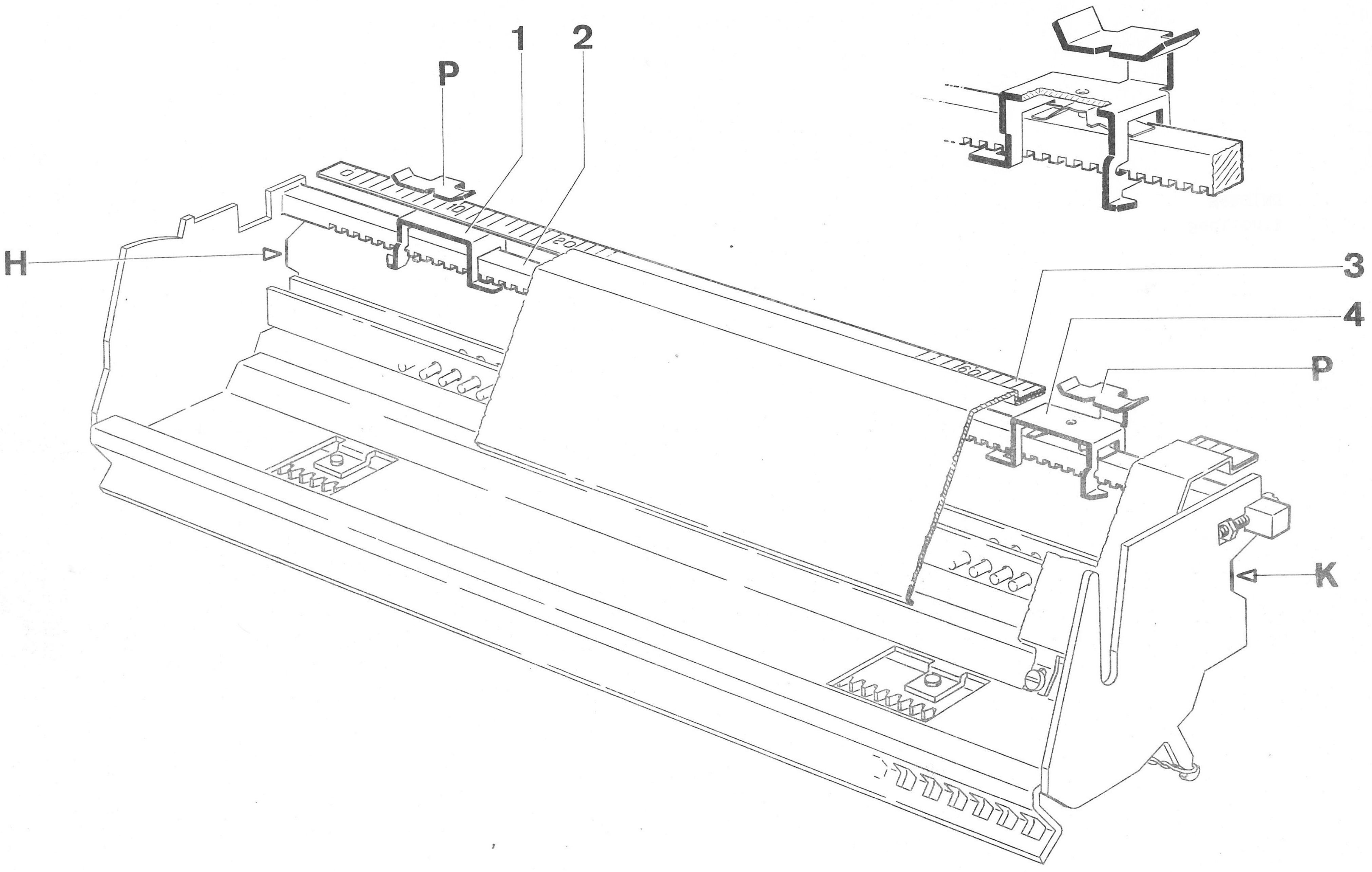
① Checking the Quantity of Release of the Escapement Loose Dog

By depressing either of the two Carriage Release Levers, the condition illustrated on page J-5 (panel 4) must take place.



Note - Repeat check with the other Carriage Release Lever.

Section K
MARGINS


P
H
P
K

The Margin Stops determine the length of the typing line:

- the Left Margin Stop determines the beginning of the line
- the Right Margin Stop determines the end of the line

The Margin Stops (1 and 4) slide on Rack (2) which is part of the Carriage.

Each Margin Stop can be manually set in the following manner:

- depress and hold down plate (P)
- slide the Margin Stop along Rack (2) to the desired position (refer to Graduated Scale (3).
- release plate (P)

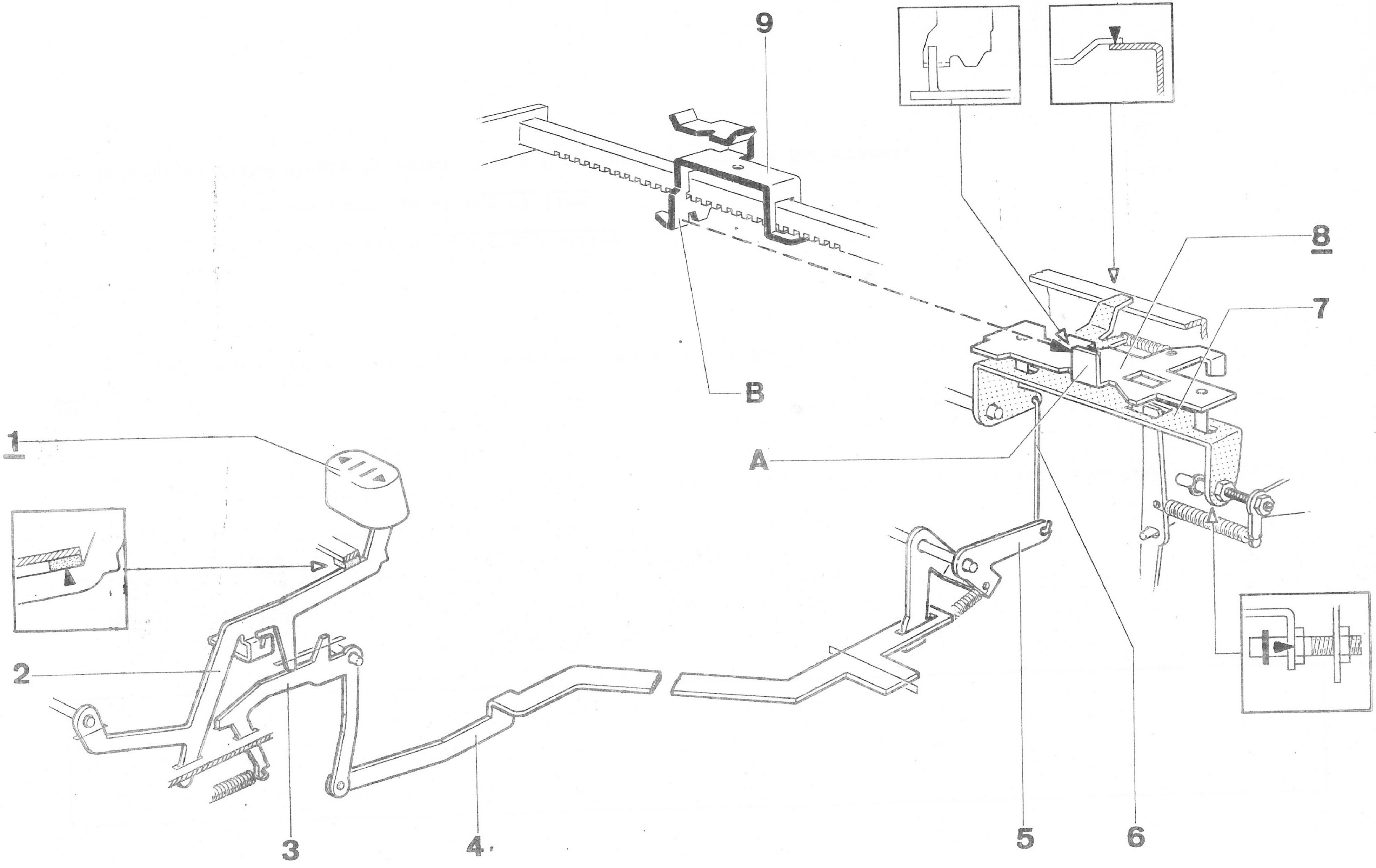
Note

In the upper detail the Margin Stop is shown engaged with the Rack.

The positions of:

- the Carriage completely banked
- the Carriage at end of line

are determined respectively by points H and K on the two Carriage End Frames.

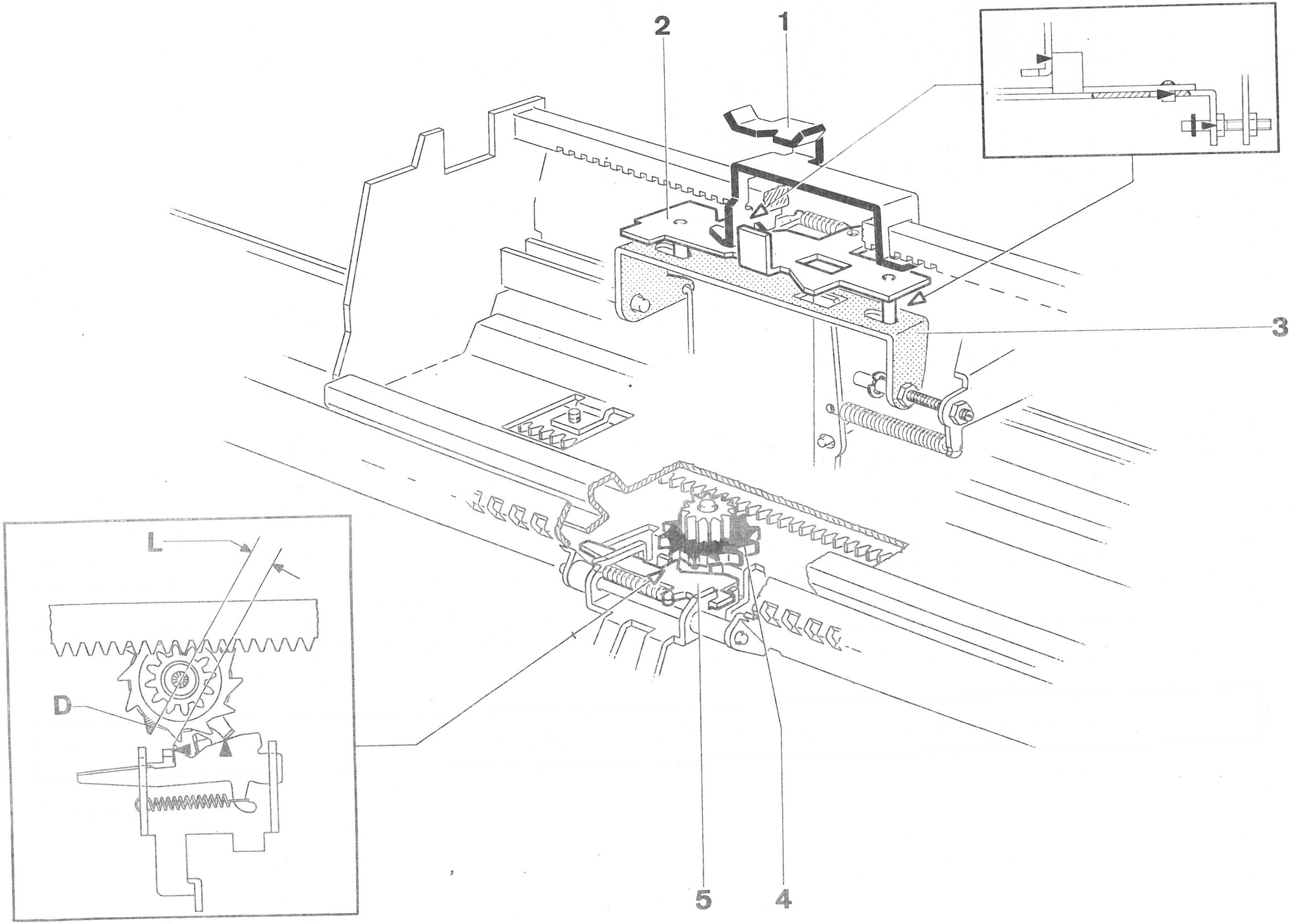

B
A

Left Margin Stop

When the Carriage is returned, the Left Margin stops the Carriage travel at the "Banking" position.

The position in which the Carriage will stop is dependent upon the angular position of Plate (8), which is normally found at rest.

When the Carriage is returned, it is stopped by the contact of Extension (B) of the Left Margin (9) against extension (A) of the Plate (8).


L
D

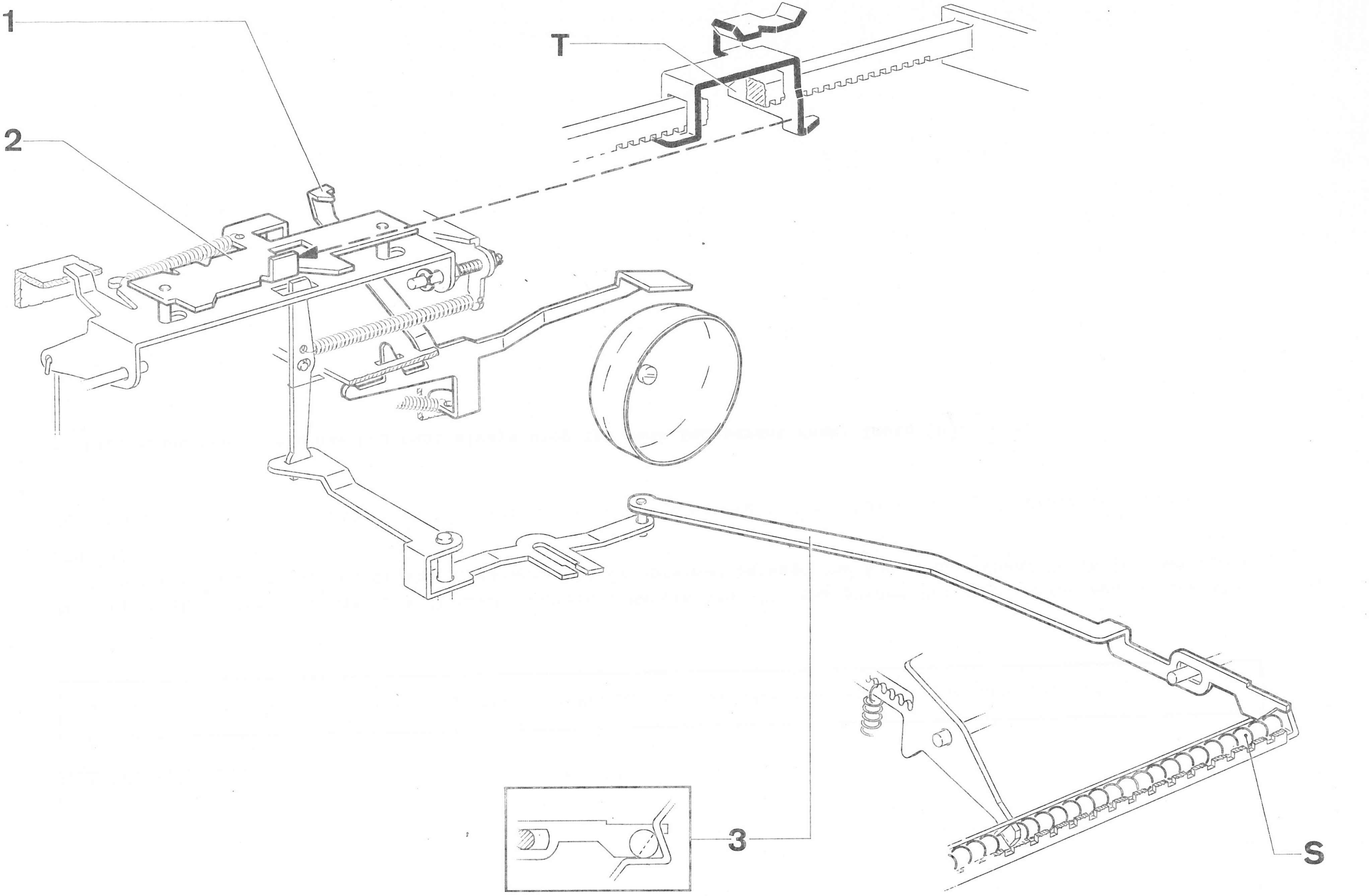
Banking Conditions

Every time the Carriage is banked at the Left Margin the Carriage must stop at the same point.*

The figure shows the Carriage in a "banked" position. Margin Stop (1) has pushed Plate (2) to the end of the slot of Stop Plate (3). In this condition, clearance "L" is obtained between the Escapement Wheel Tooth (D) and Loose Dog (5).

This clearance allows the Loose Dog to enter and hold the Escapement Tooth (D) when the Carriage is released.

* This means that the Loose Dog must always stop the same Escapement Wheel Tooth (D).


T
S

Right Margin Stop

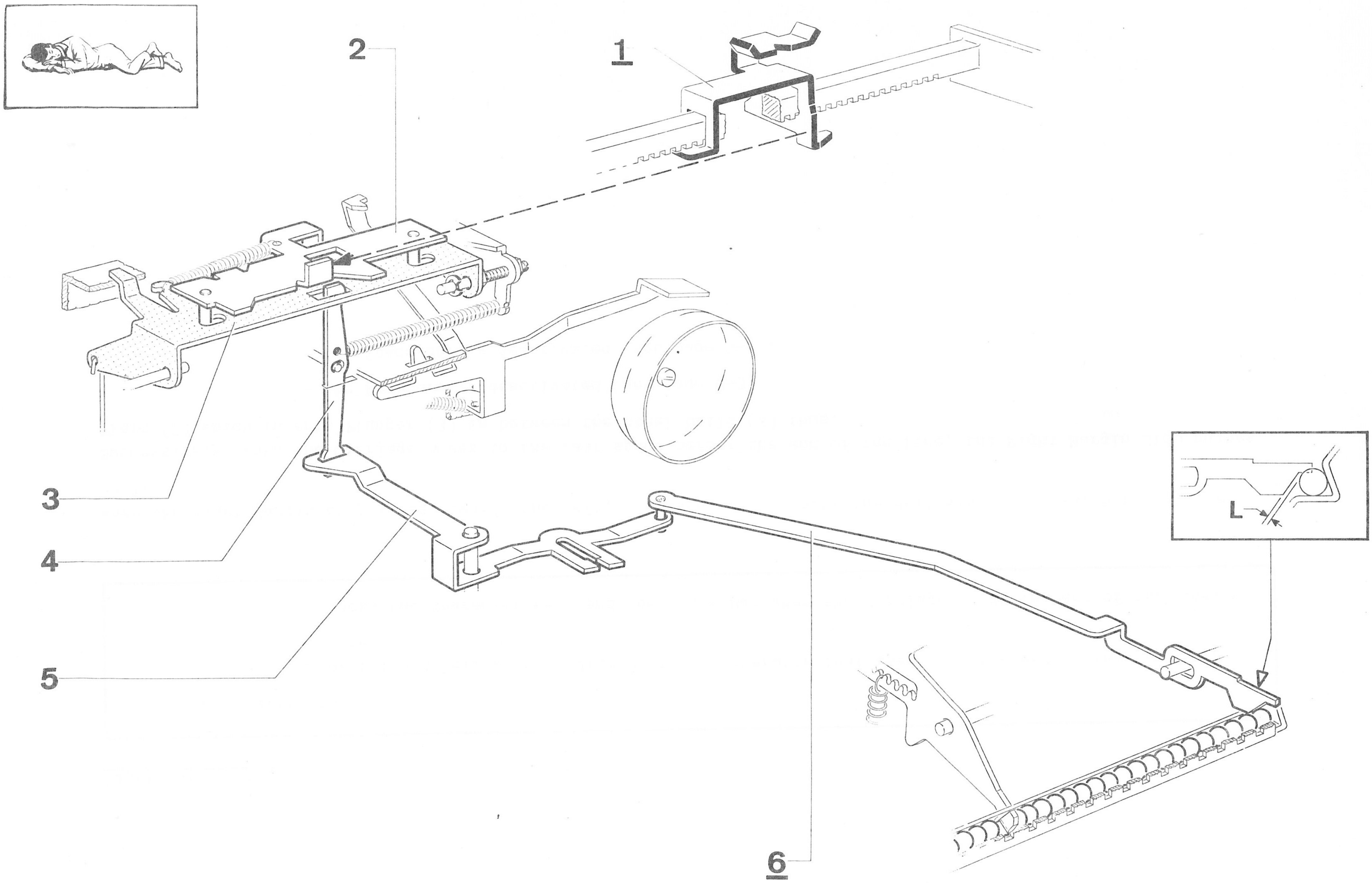
The right Margin Stop:

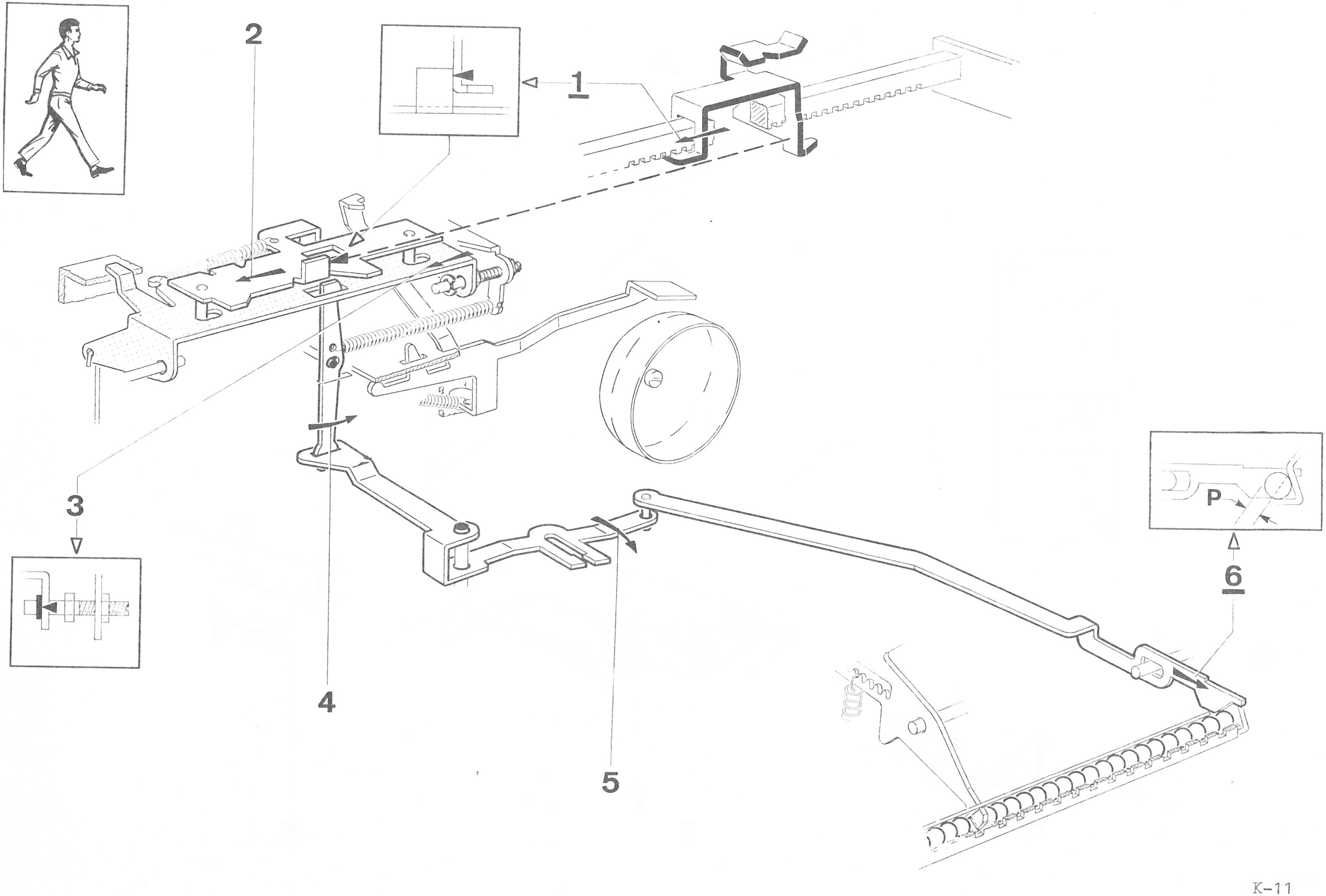
- operates a Bell which indicates to the operator that she is at the end of the writing line
- locks the Character Keys and the Space Bar when the Carriage is at the end of the line.

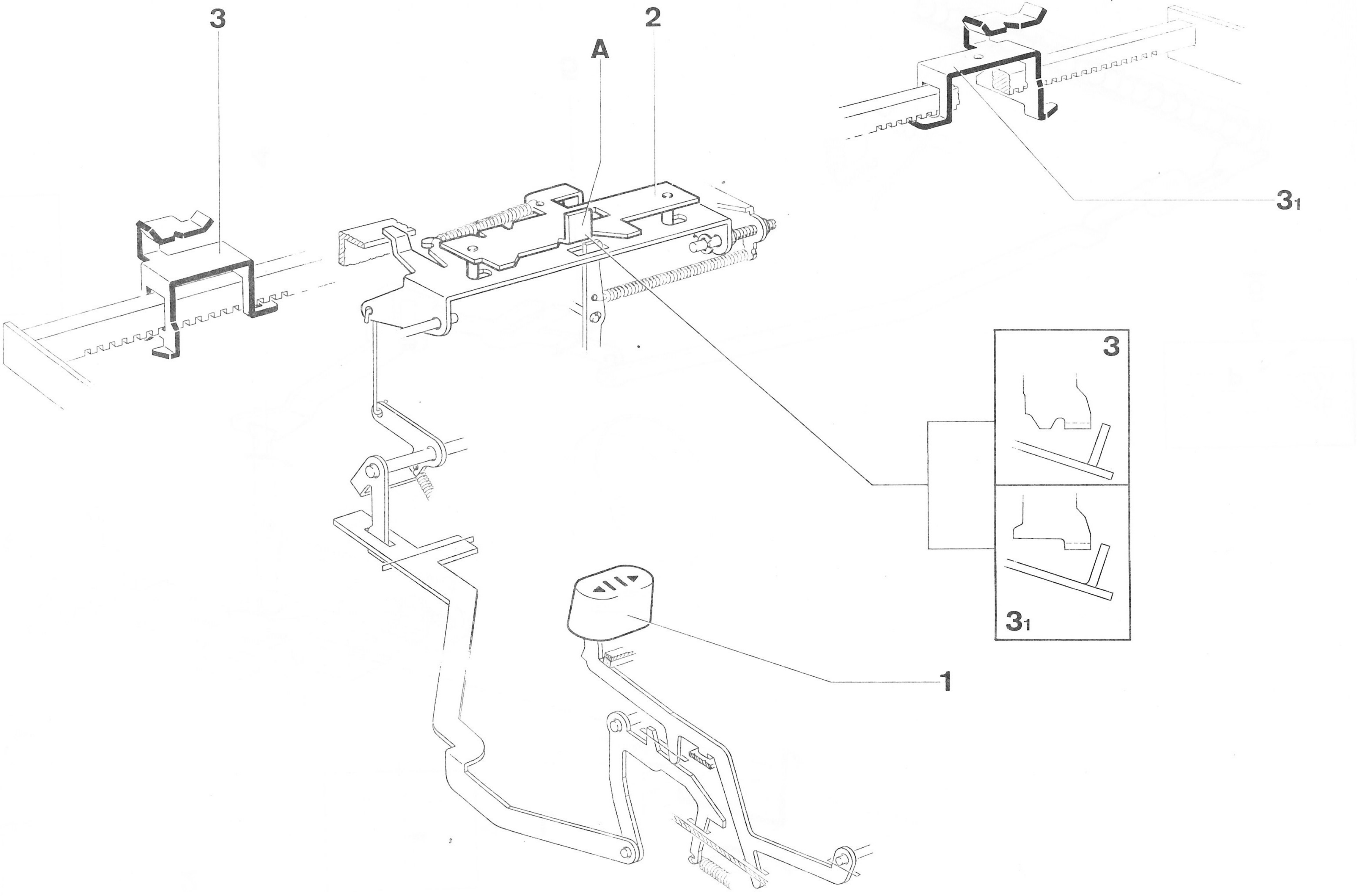
When the Right Margin Stop moves towards the left, its extension (T) hits the Bell Ringer (1) which rings the Bell.

Successively, when the Carriage moves to the last space before the end of the line, the Right Margin Stop pushes Plate (2) which inserts Plunger (3) in between the steel balls (S) thus:

- the Keyboard is deactivated (see page C-3)
- the Space Bar is deactivated (see page G-3).


L


P


3
2
A
3_1
3
3_1
1

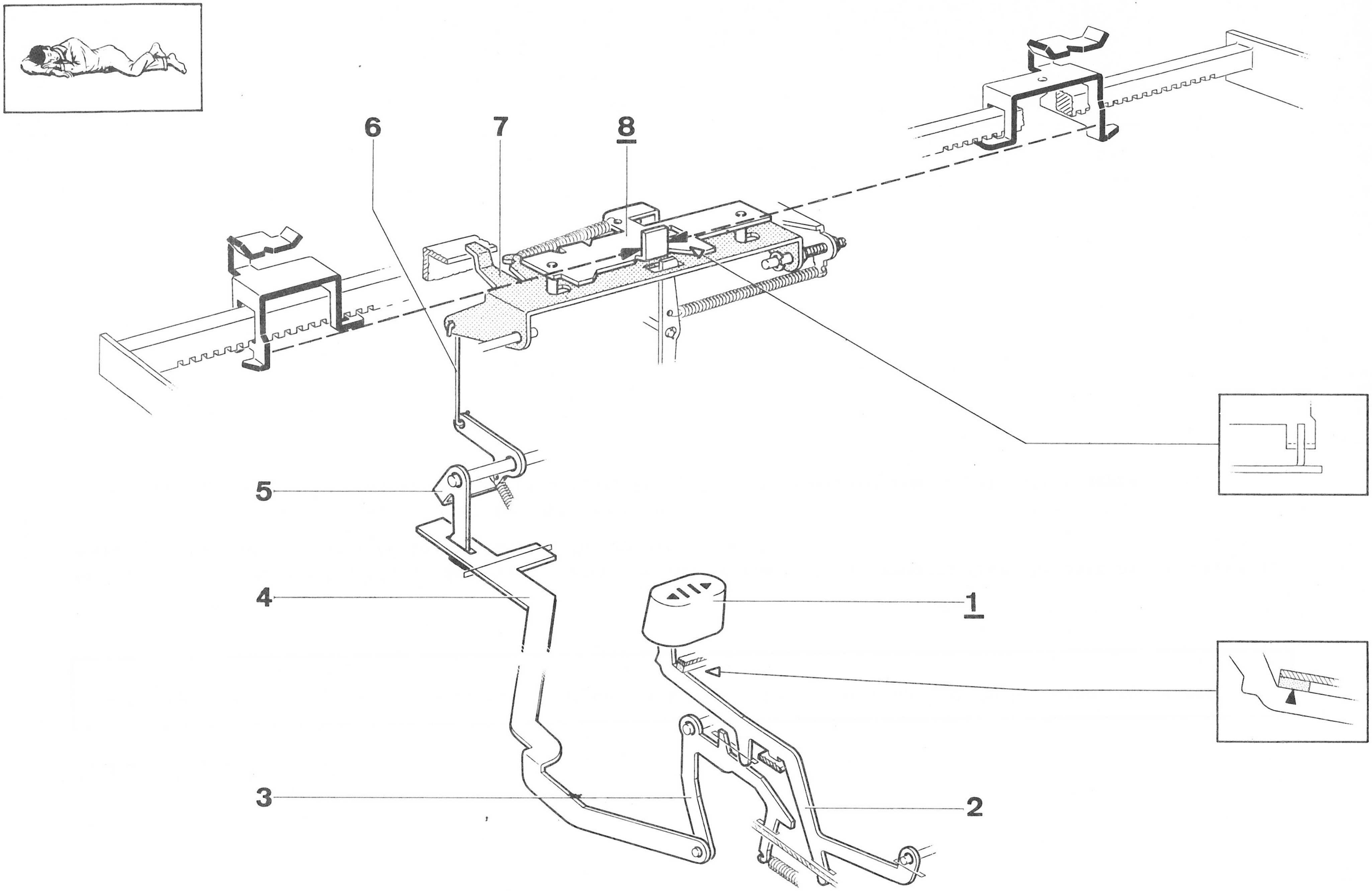
Margin Release Mechanism

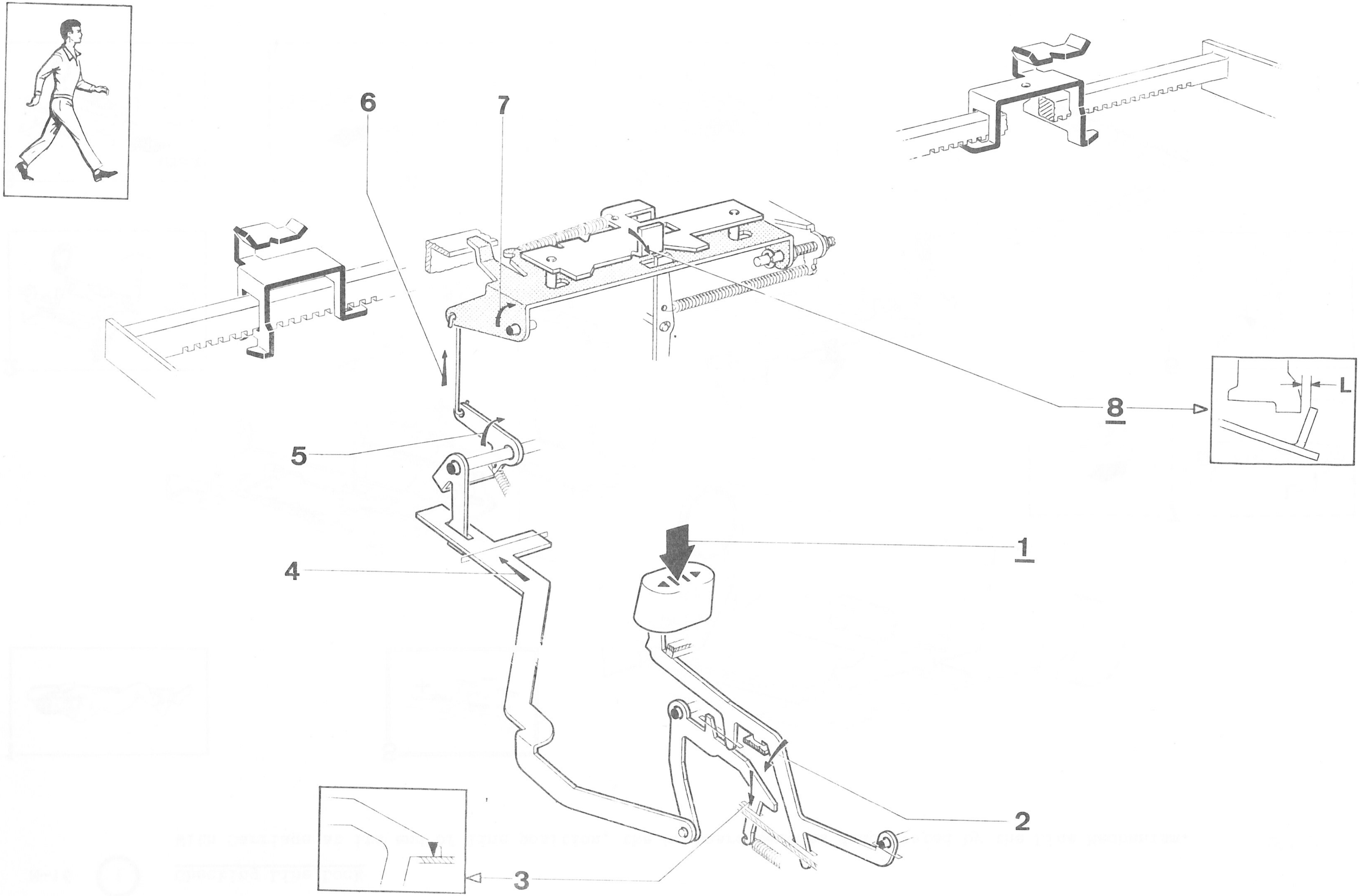
When the Carriage is banked or stopped at the end of a line, the Margin Stops can be by-passed by depressing the Margin Release Key.

When the Margin Release Key (1) is depressed, extension (A) of Plate (2) is removed from the path of (3) or (3_1), therefore, the Carriage is free to move beyond the Margin Stop.

If the Carriage is banked, Key (1) must be kept depressed:

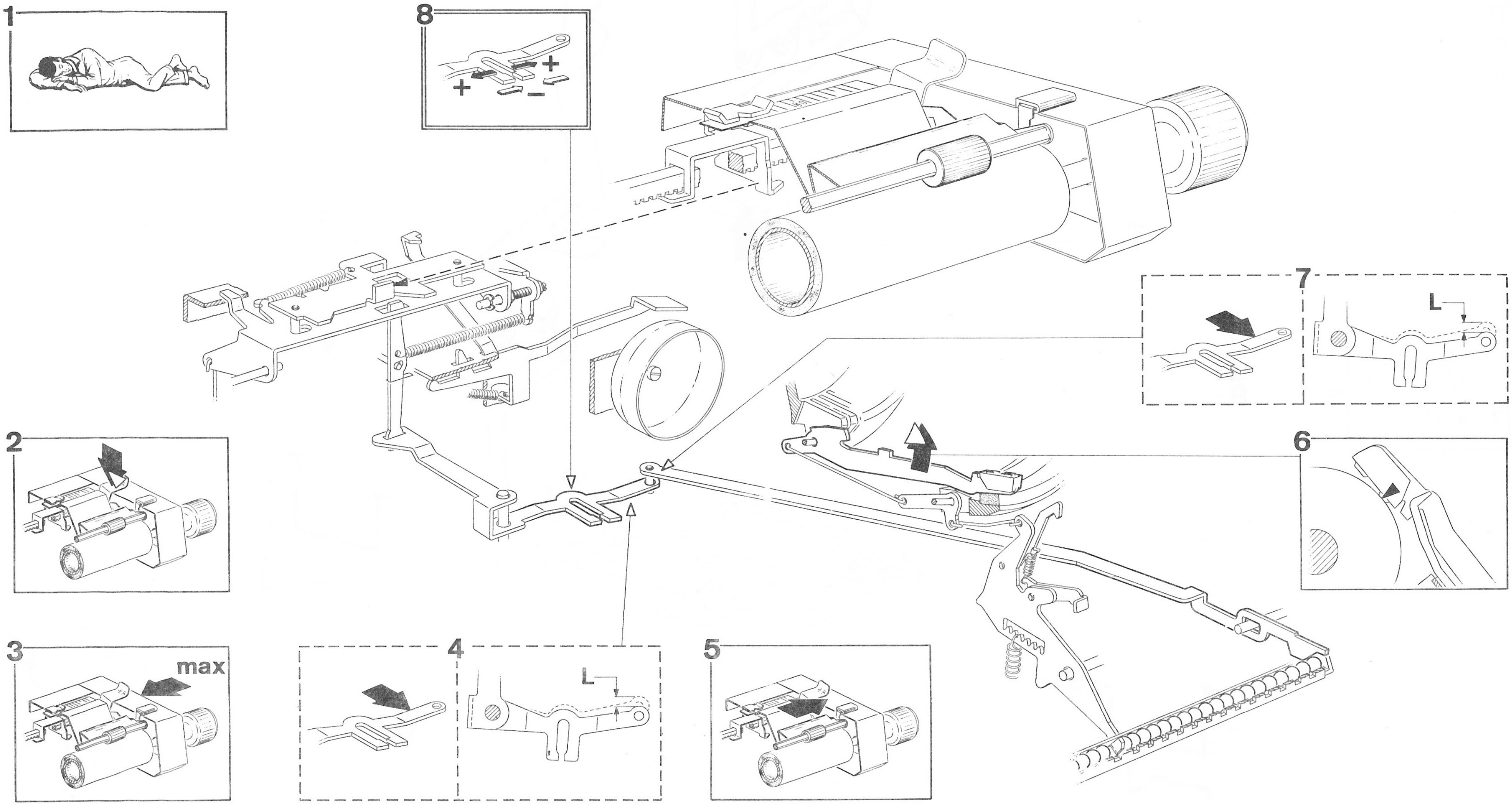
- if the Carriage is stopped at the end of a line, Key (1) can be released immediately after depression.




L

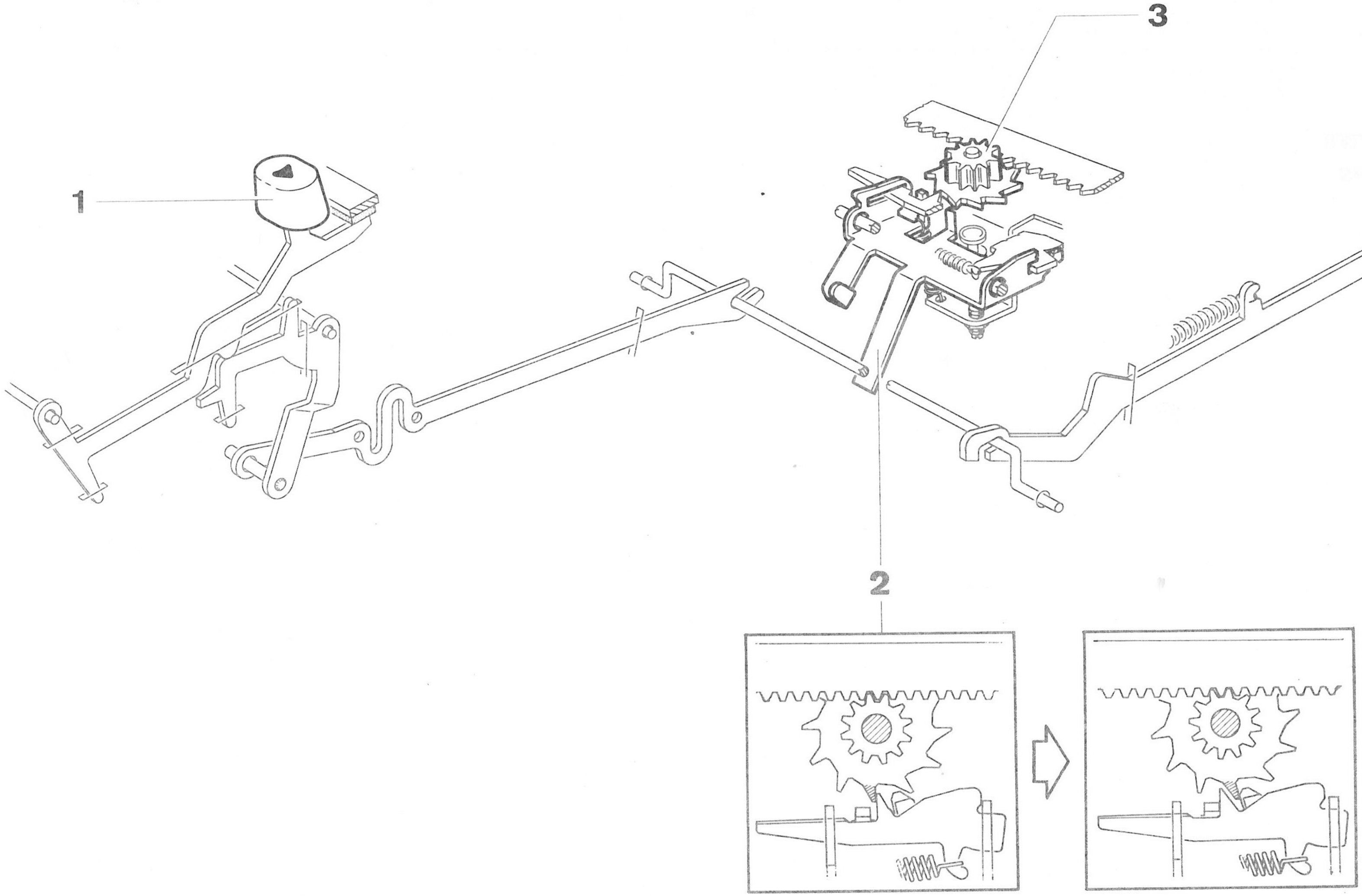
M-16 ① Checking Line Lock

With Carriage at its end of line position, the keyboard becomes deactivated by the Line Mechanism.


1
8
+
+
–
7
L
2
6
3
max
4
L
5

The adjustment for the other Margin Stop functions (Margin Release, Banking, etc.) are covered in section M - Tabulation as they depend strictly on the position of the Service Plate.

Section I
HALF SPACE



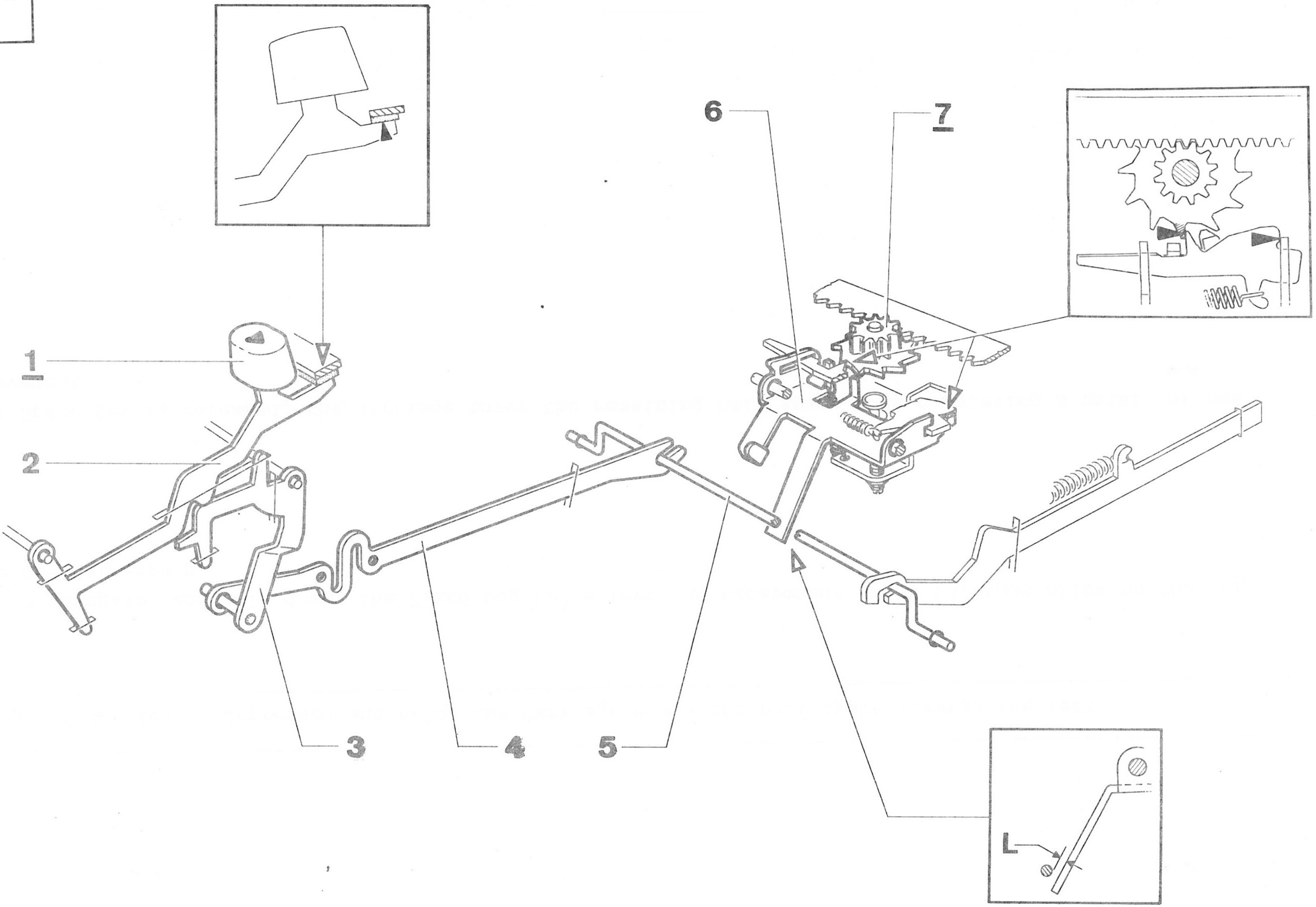
Foreword

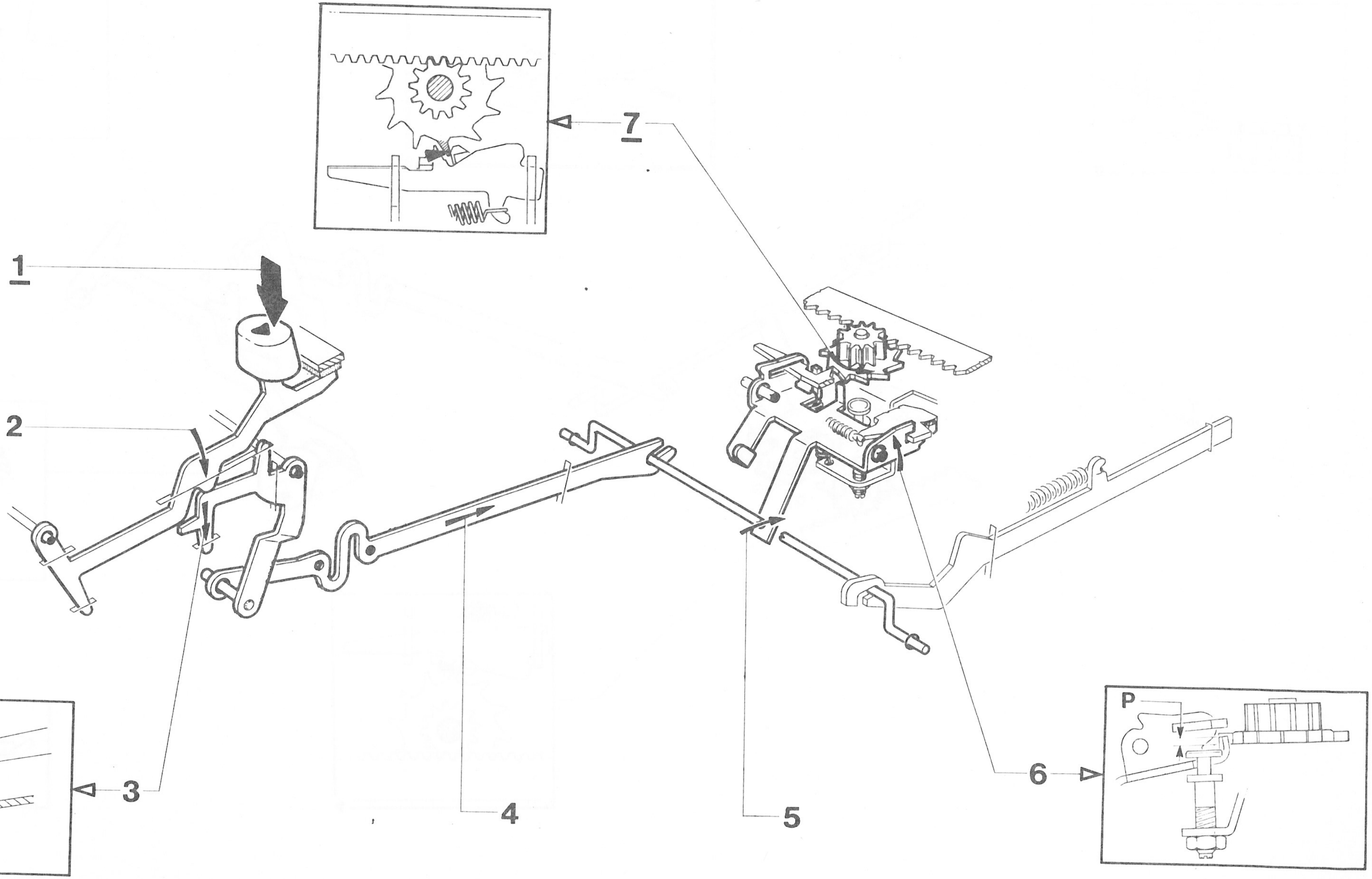
When the Half Space Key is depressed and held, the Carriage moves one half space towards the left.

When Key (1) is depressed and held down, the Fixed Dog (2) enters the Escapement Wheel (3) thus allowing the carriage to move one half-space.

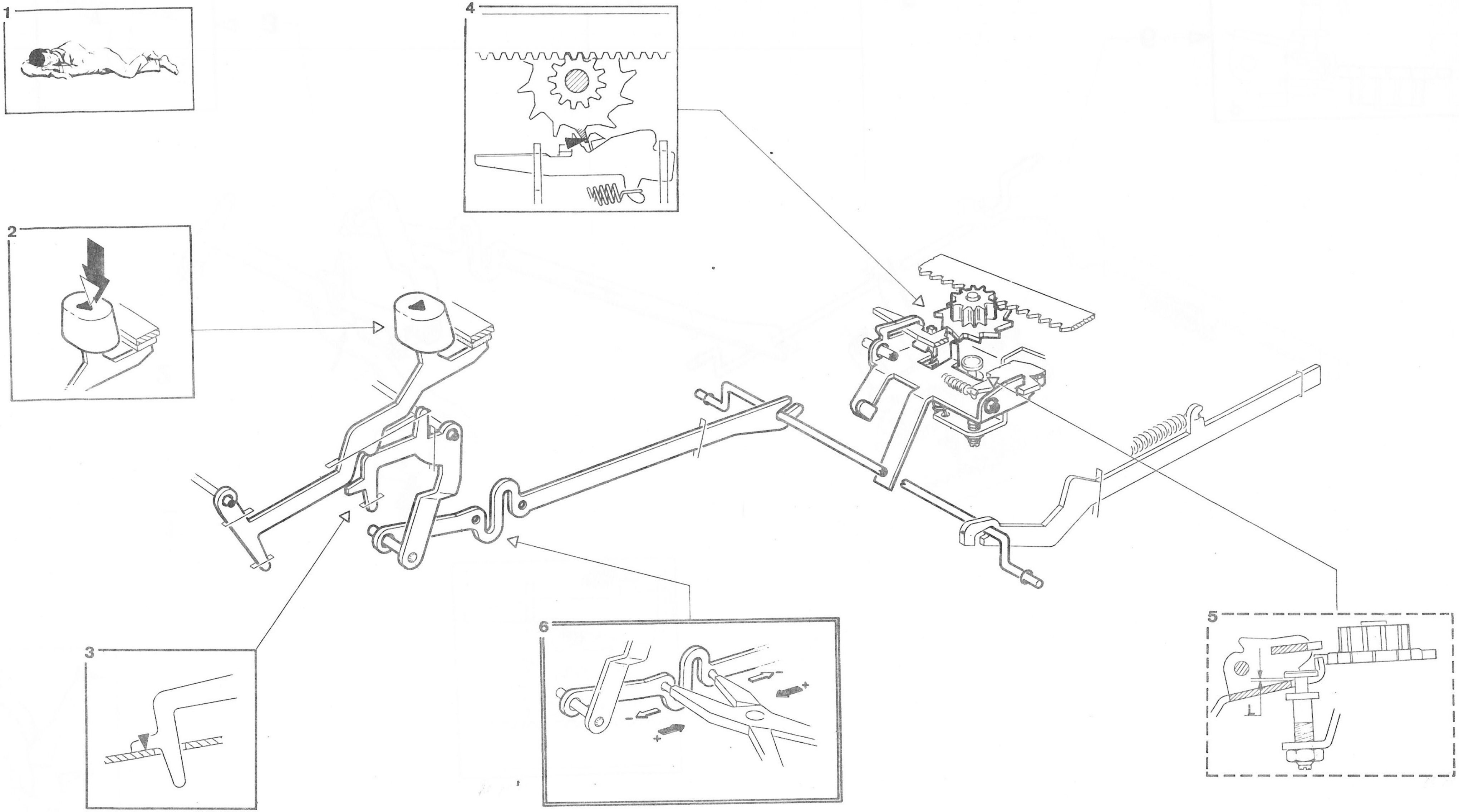
Note

When the Half Space Key is released, the Carriage moves the remaining half space thus completing a total of one full space movement.


1
2
3
4
5
6
7
L

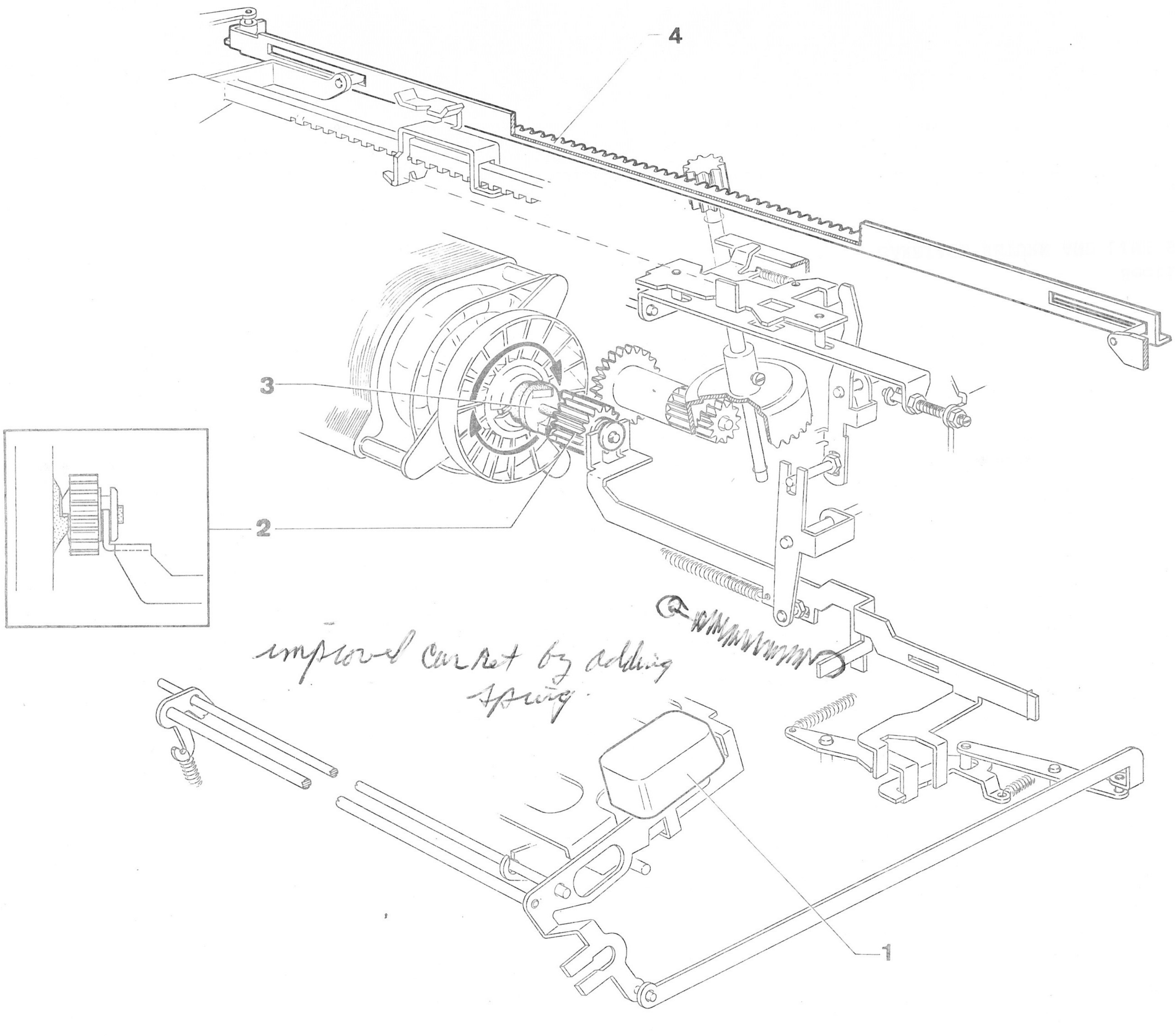

1
2
3
4
5
6
7
P

① Half-step Operation Condition Check



Section L

CARRIAGE RETURN AND LINE SPACE



improved contact by adding
spring.

Foreword

When the Carriage Return Key is depressed, the following occur in order:

- Line Spacing
- Carriage is Returned (Banked)

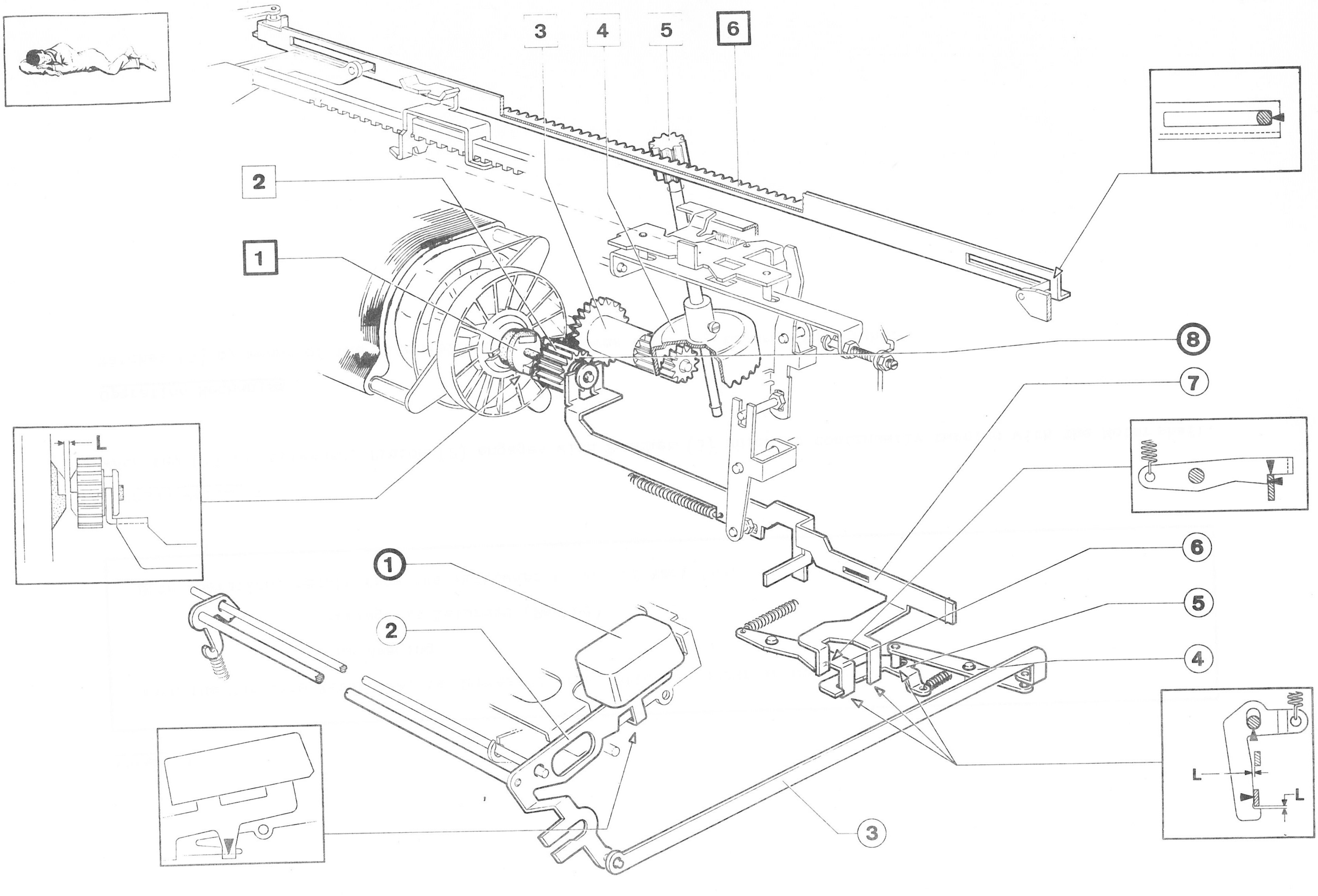
Both operations result from the rightward travel of Rack (4).

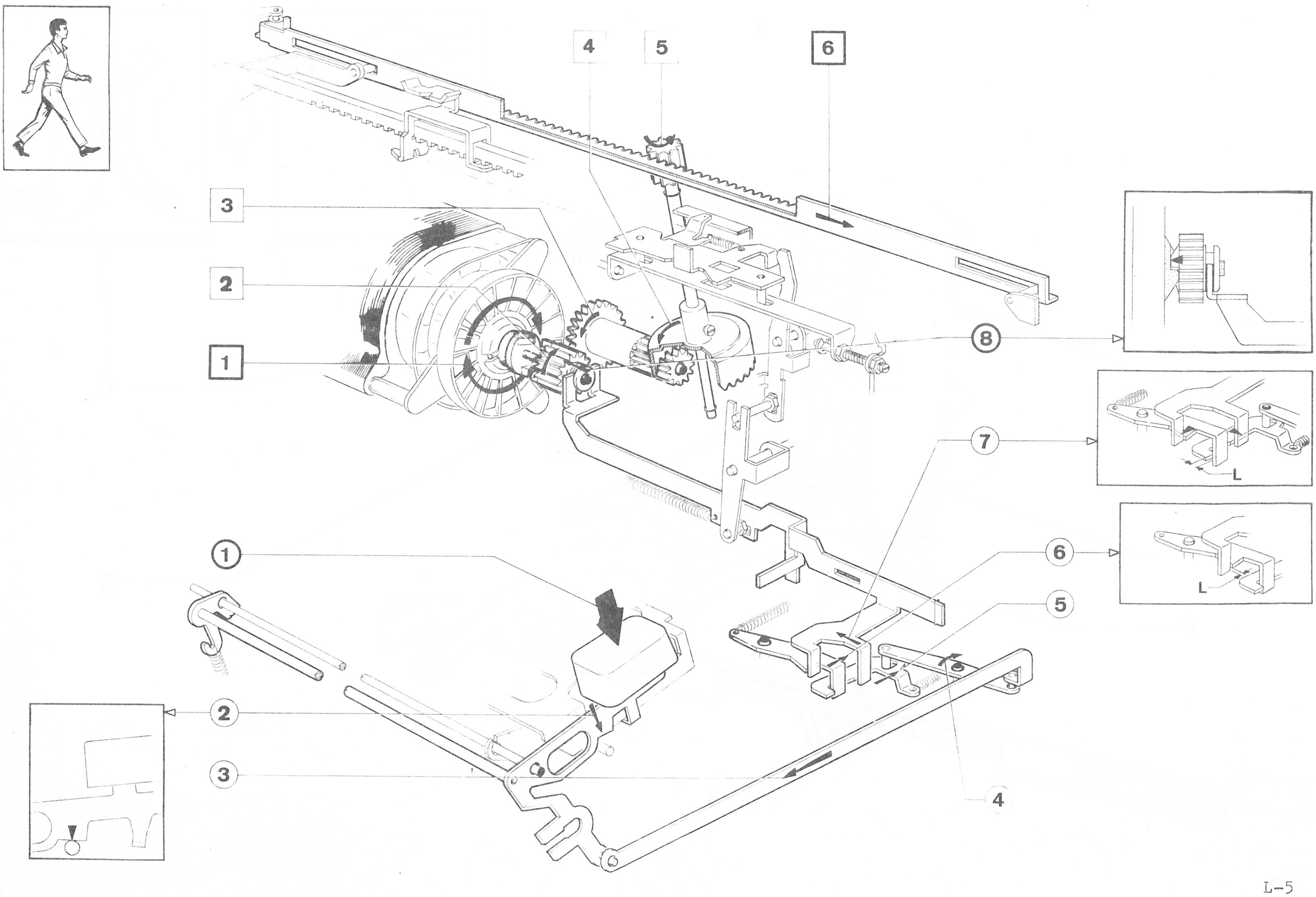
Command Mechanism

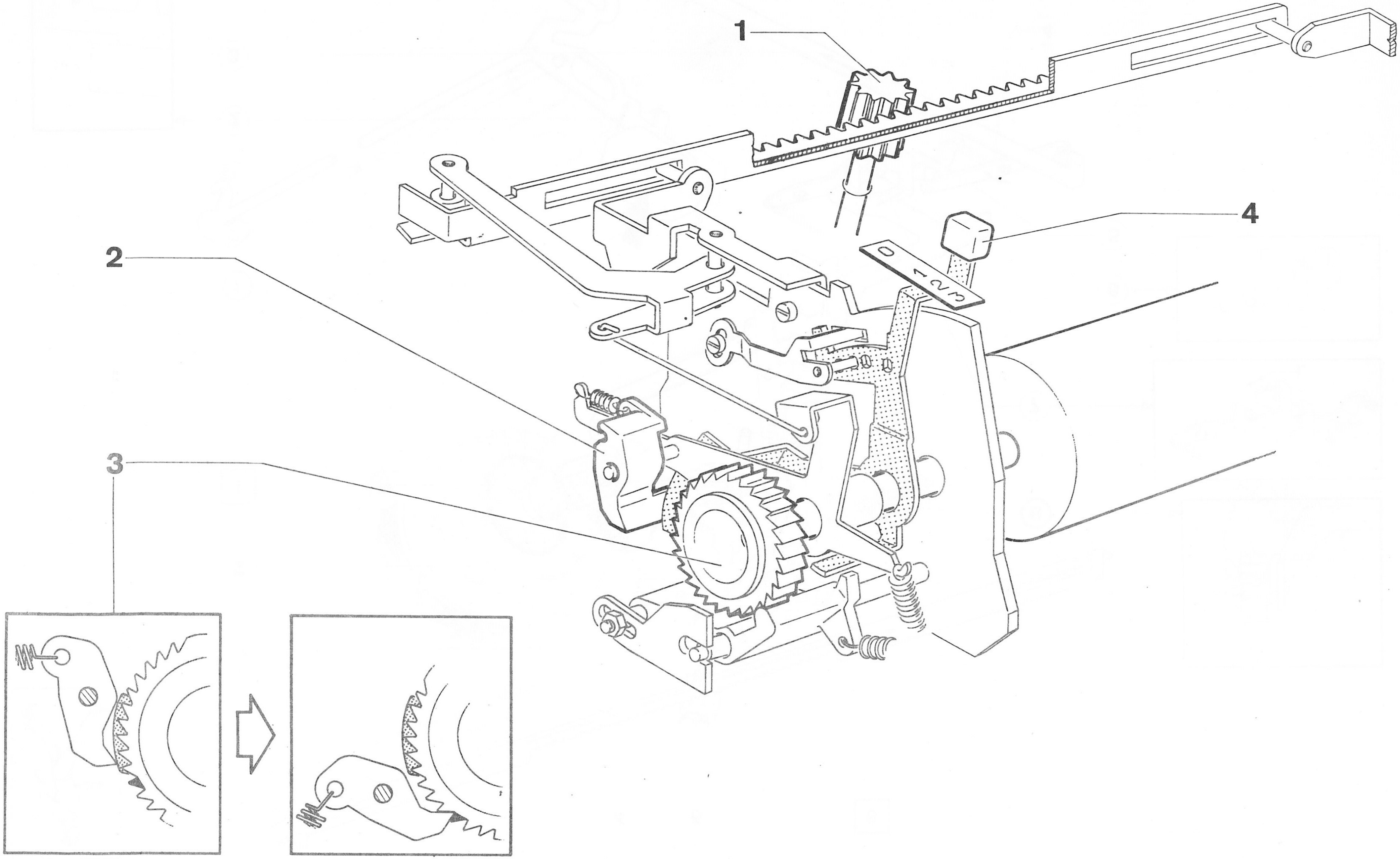
When Key (1) is depressed, Pinion (2) engages with Ratchet (3) which is continually turning with the Motor shaft.

Operation Mechanism

Ratchet (3) by means of the intermediate Gears, moves Rack (4) towards the right.


L
①
②
L
L


L
L


1 2 3

Line Space

Every time the Carriage is returned and banked (by depressing the Carriage Return Key), the Platen is rotadet in order to type on a new line. The amount of Platen rotation (line space) is manually selected by means of Lever (4).

The Lever can assume four different positions; from 0 to 3.

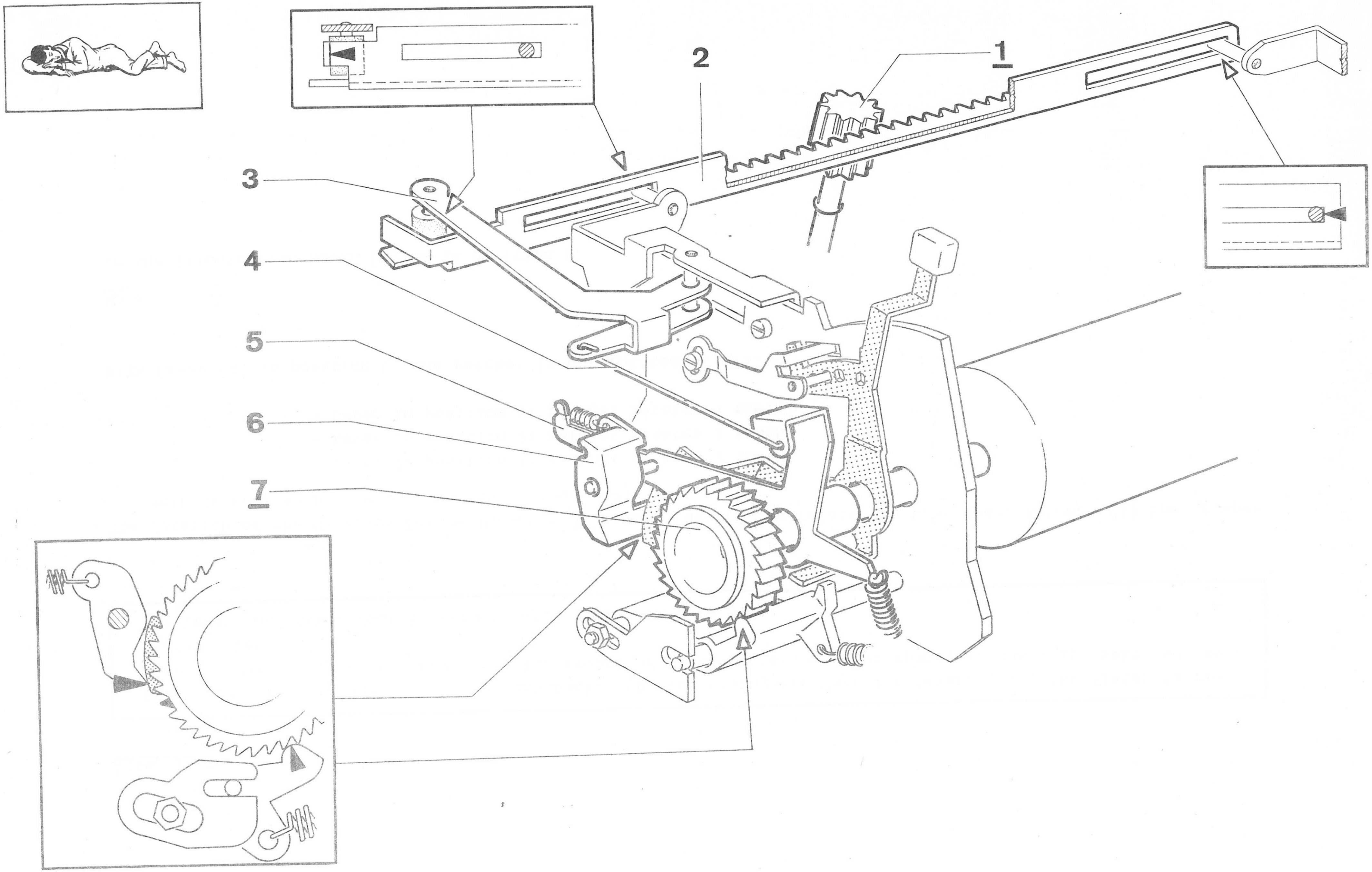
The rotation of the Carriage Return Pinion (1), causes Pawl (2) to rotate the Line Space Ratchet (3) the number of teeth determined by the positioning of Lever (4), that is:

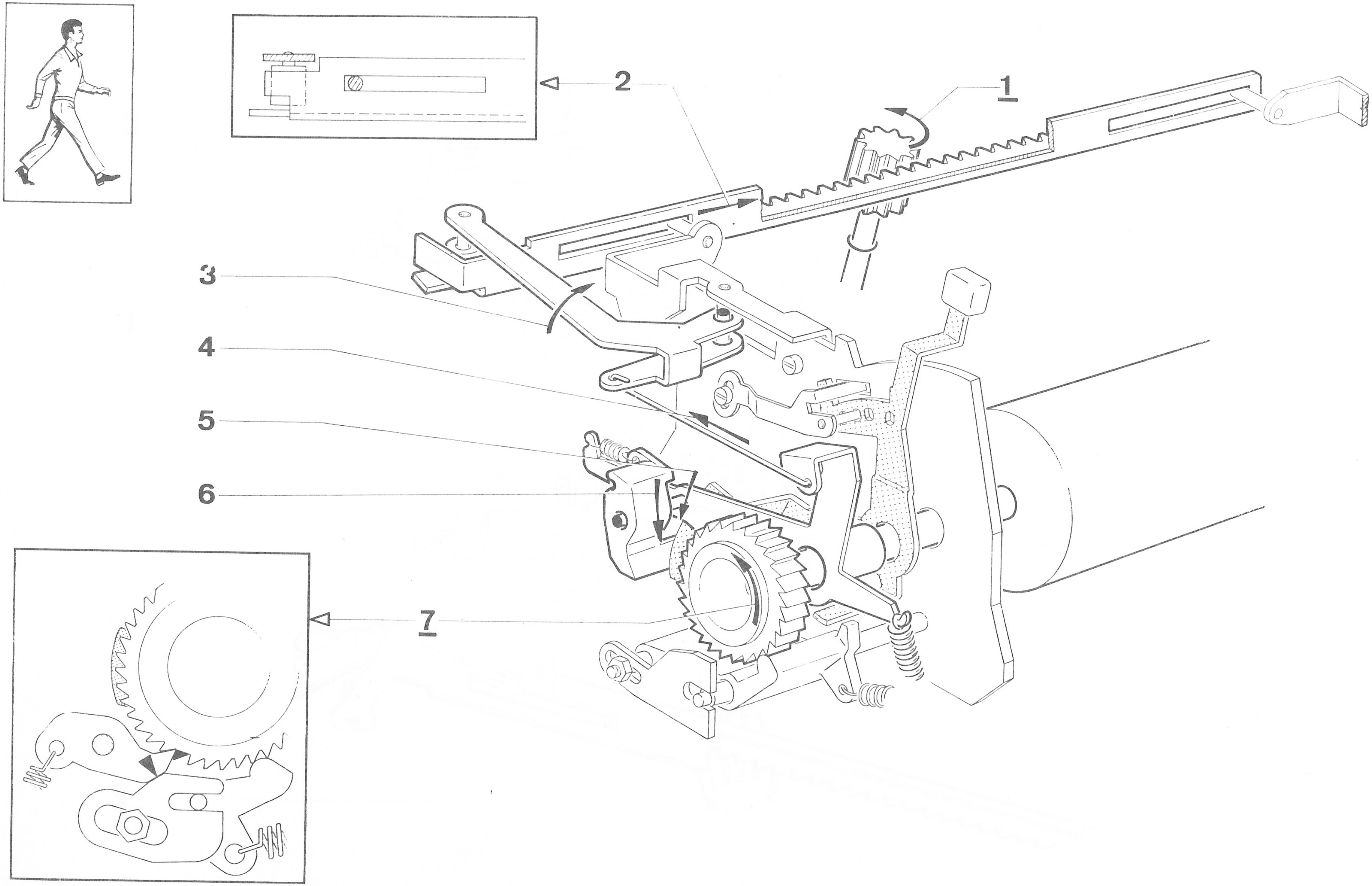
- Lever in position 1: ratchet rotates 2 teeth
- Lever in position 2: ratchet rotates 3 teeth
- Lever in position 3: ratchet rotates 4 teeth

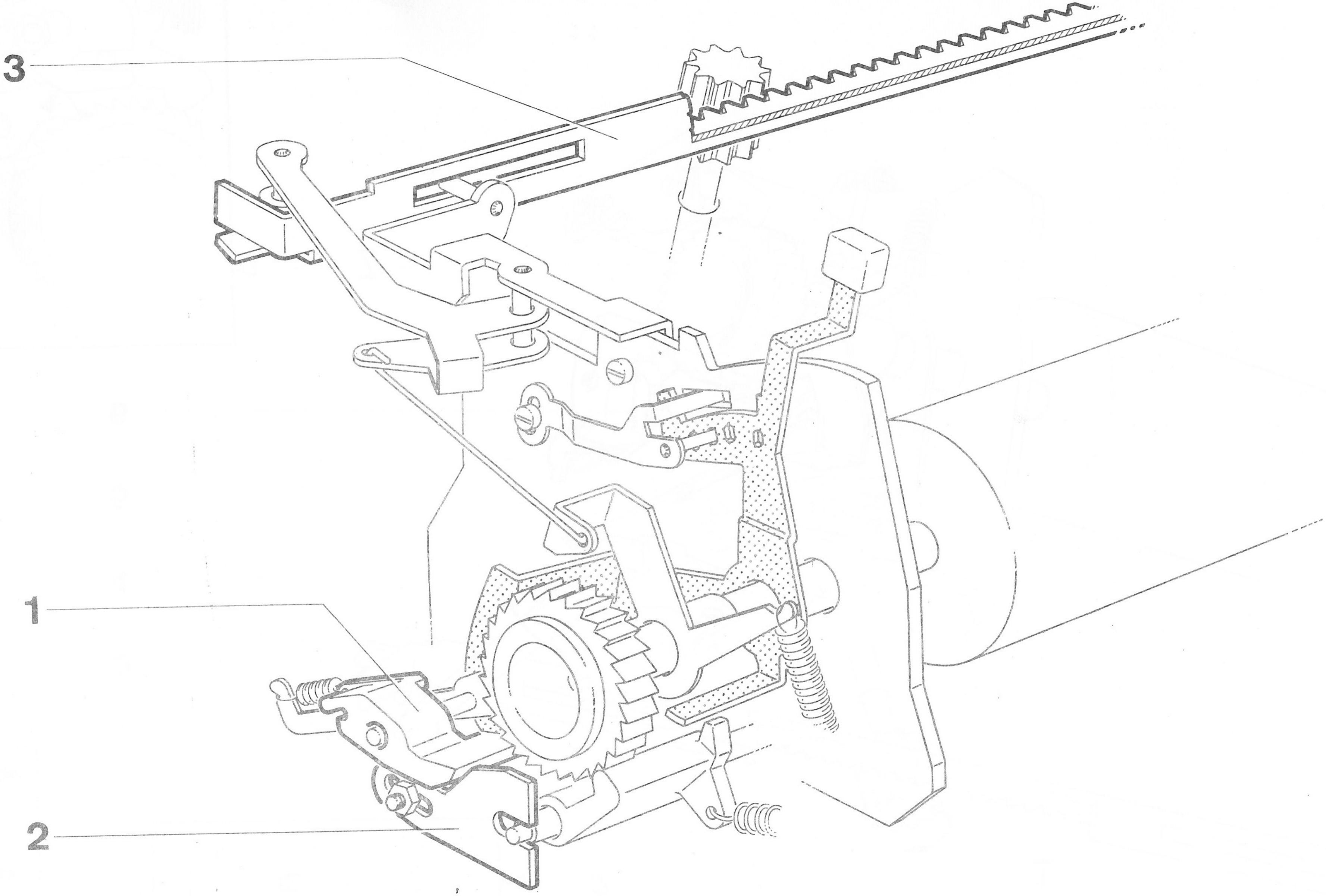
With Lever (4) in position 0, the ratchet is not rotated at all.

Note

In the illustration Lever (4) is in position 2.

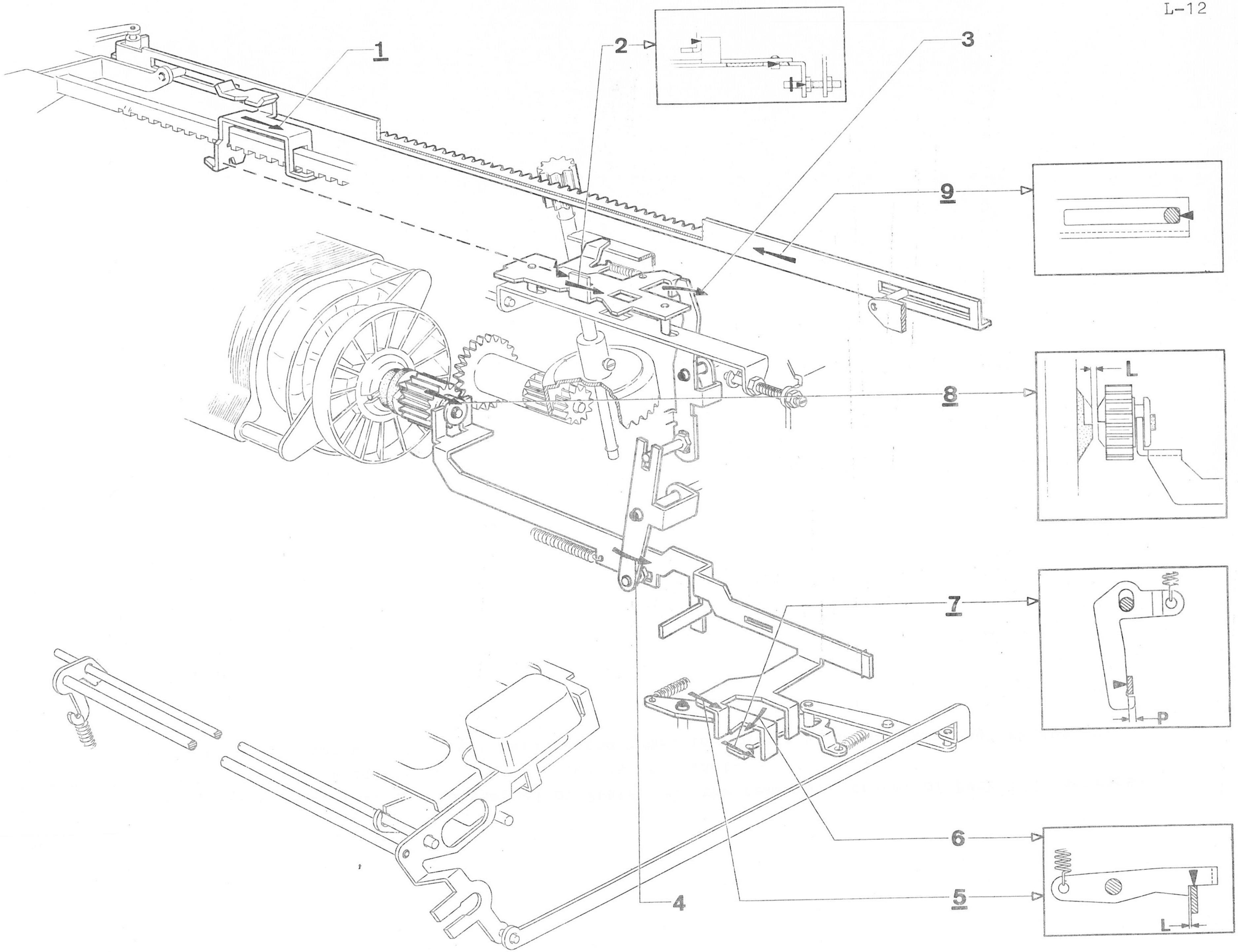






Carriage Return

When the rotation of the Line Space Pawl (1) is stopped by Plate (2), the remaining travel of Rack (3) is transmitted immediately to the Carriage which begins to move towards the right.
The Carriage stops its return motion when the Left Margin Stop comes in contact with the "Banking" extension.


1
2
3
9
8
L
7
P
6
5
L
4

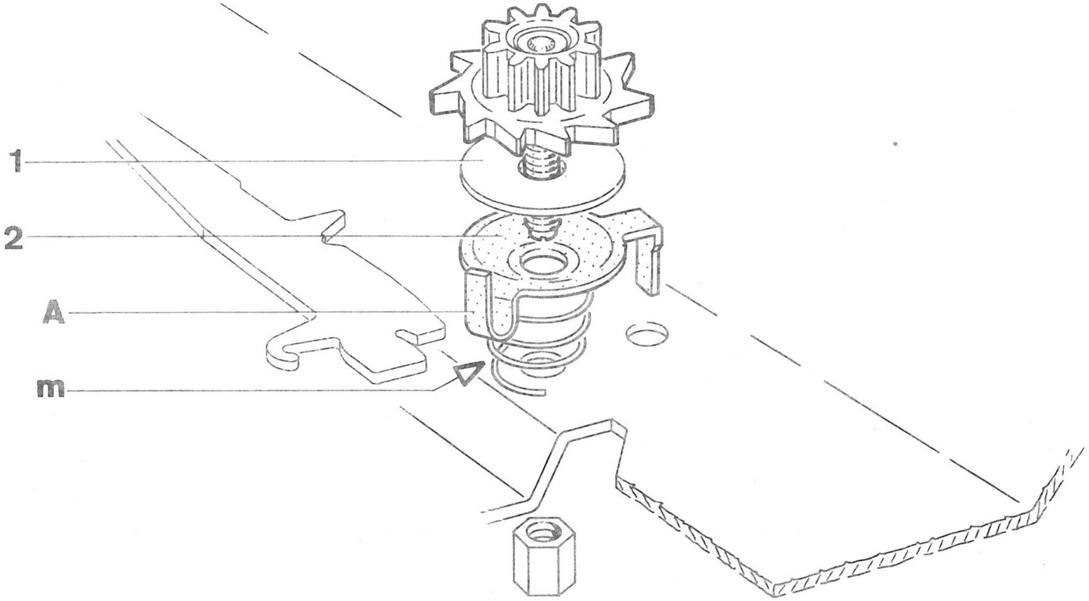
End of Carriage Return and Restoring of Banking Mechanism

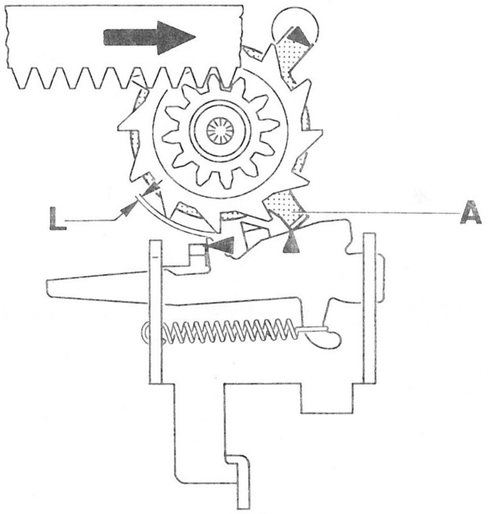
When the Left Margin Stop gets to the Banking Plate:

- Pinion (8) disengages from the Motor Ratchet, consequently the Carriage remains stationary
- Slider (5) is rehooked to Hook (6)
- Hook (7) relatches with Hook (6)
- Rack (9) returns to rest.

Note

The illustration shows only the direction of movement and the relative conditions after the movement is completed.


1
2
A
m


L
A

Silencer Device

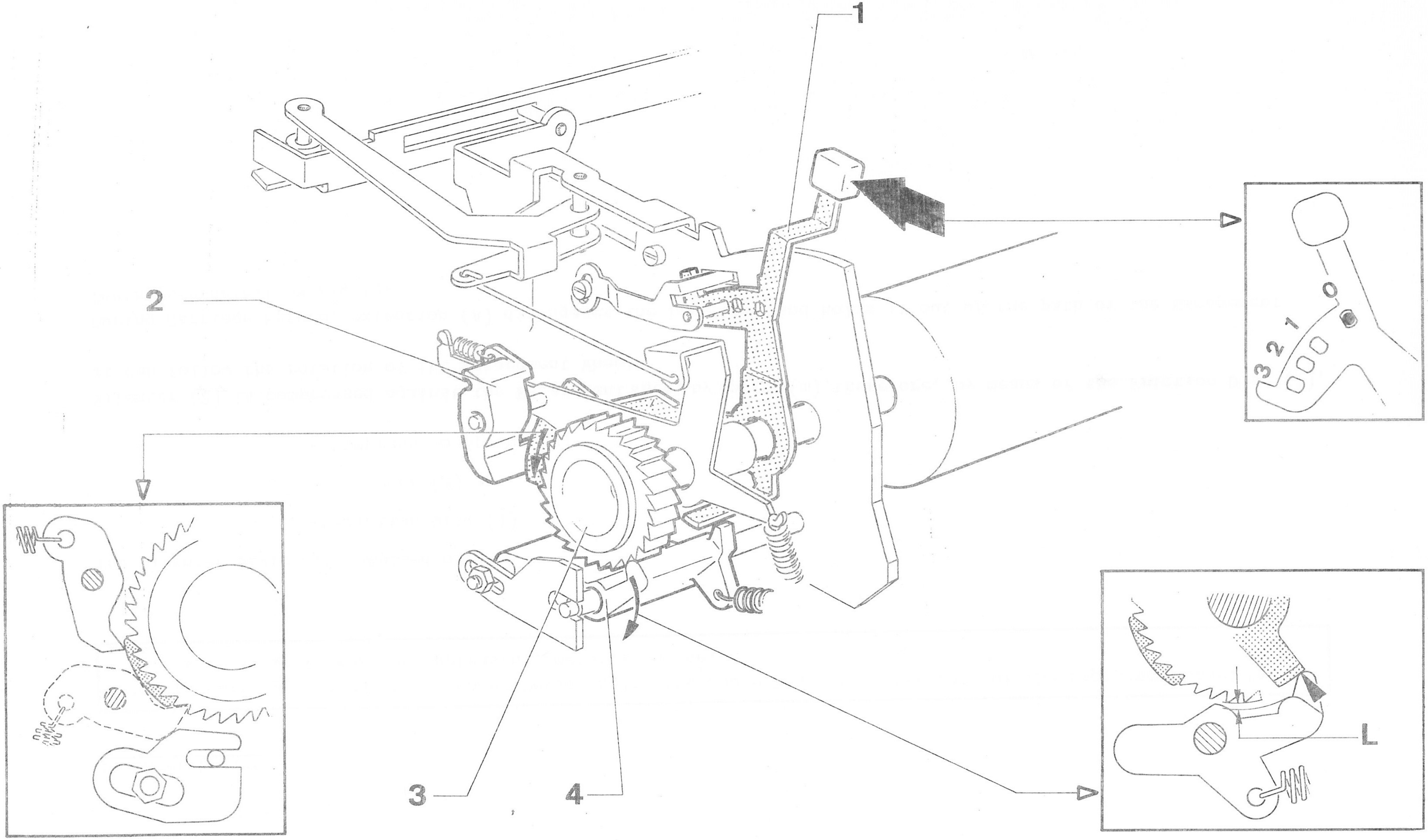
During Carriage Return the Silencer Device holds the Loose Dog out of the path of the Escapement Wheel Teeth, otherwise it would make an unpleasant, metallic noise.

The Silencer Device is composed of:

- Friction Disc (1)
- Silencer (2)
- Compression Spring (m)

Silencer (2) is compressed against the Escapement Wheel by Spring (m), therefore, by means of the Friction Disc (1), it can follow the rotation of the Escapement Wheel.

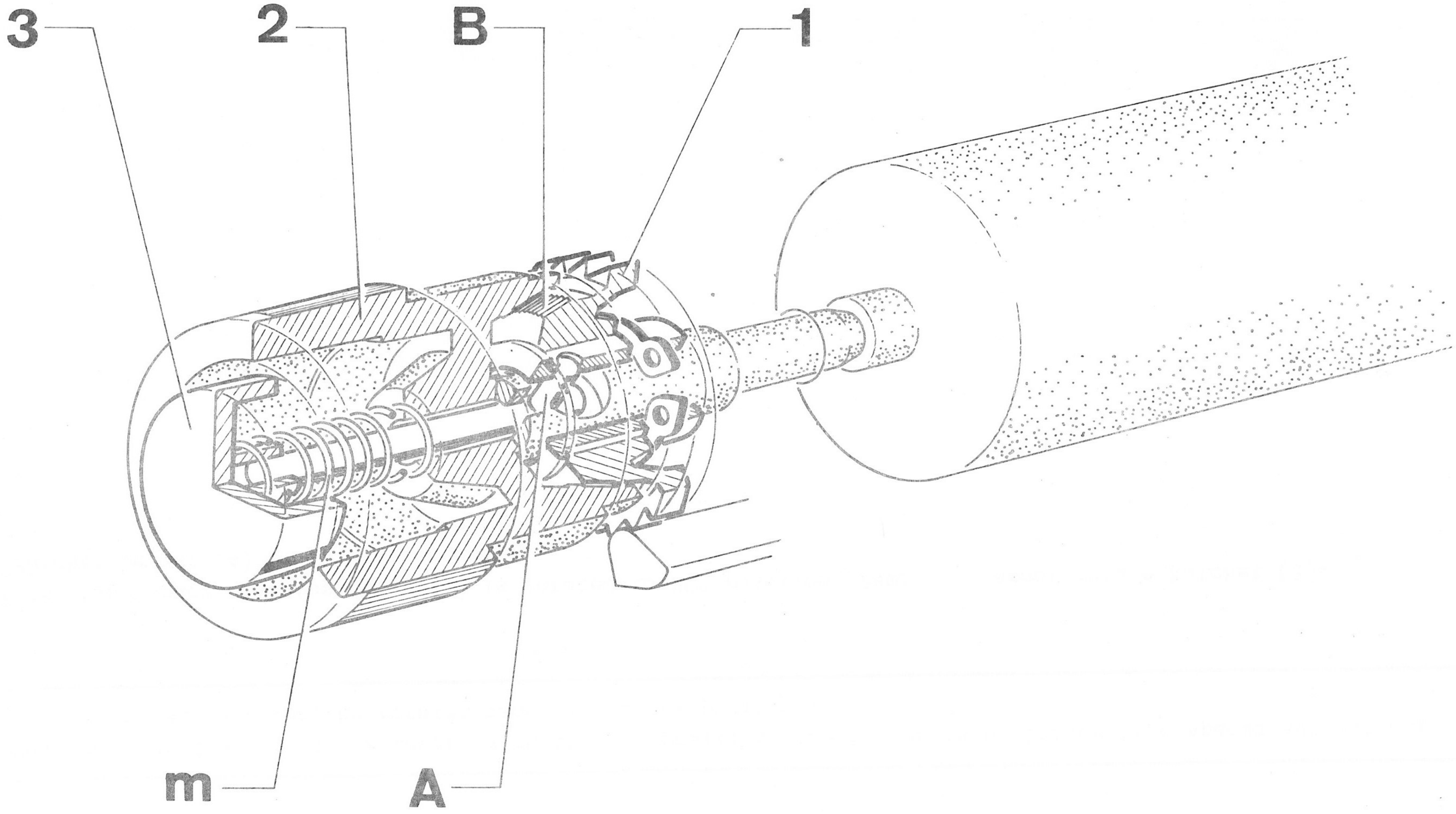
During Carriage Return, extension (A) disengages the Loose Dog and holds it out of the path of the Escapement Teeth (see detail on right).


L

Line Space Selector Lever at "0" position

When the Line Space Selector Lever is in the "0" position, the Platen is no longer line spaced automatically. The Platen can, however, be rotated manually to any position.

When the Line Space Selector Lever (1) is rotated to "0" position, Pawl (2) cannot rotate Ratchet (3). The Ratchet Detent (4) is also disengaged.


3
2
B
1
m
A

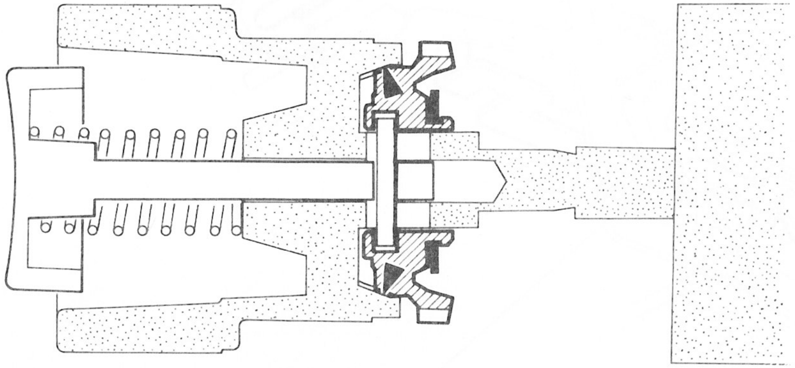
Platen Variable Clutch

The Line Space Ratchet is not rigidly coupled to the Platen. It is coupled through a clutch, called a "Variable", which has the following characteristics:

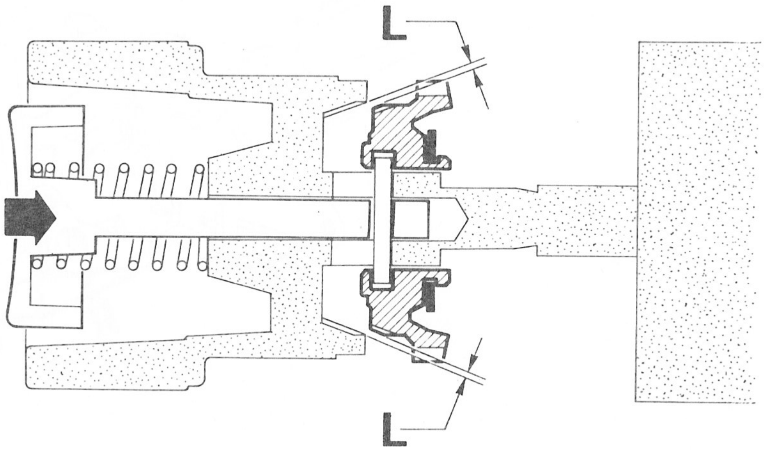
- the Line Space Ratchet (1) is integrated with the Platen Shaft by pin (A). The Ratchet can be disengaged and displaced by Push Button of Variable (3).
- Compression Spring (m) holds the Platen Knob (2) engaged with the Line Space Ratchet (1) and they become meshed through teeth (B).

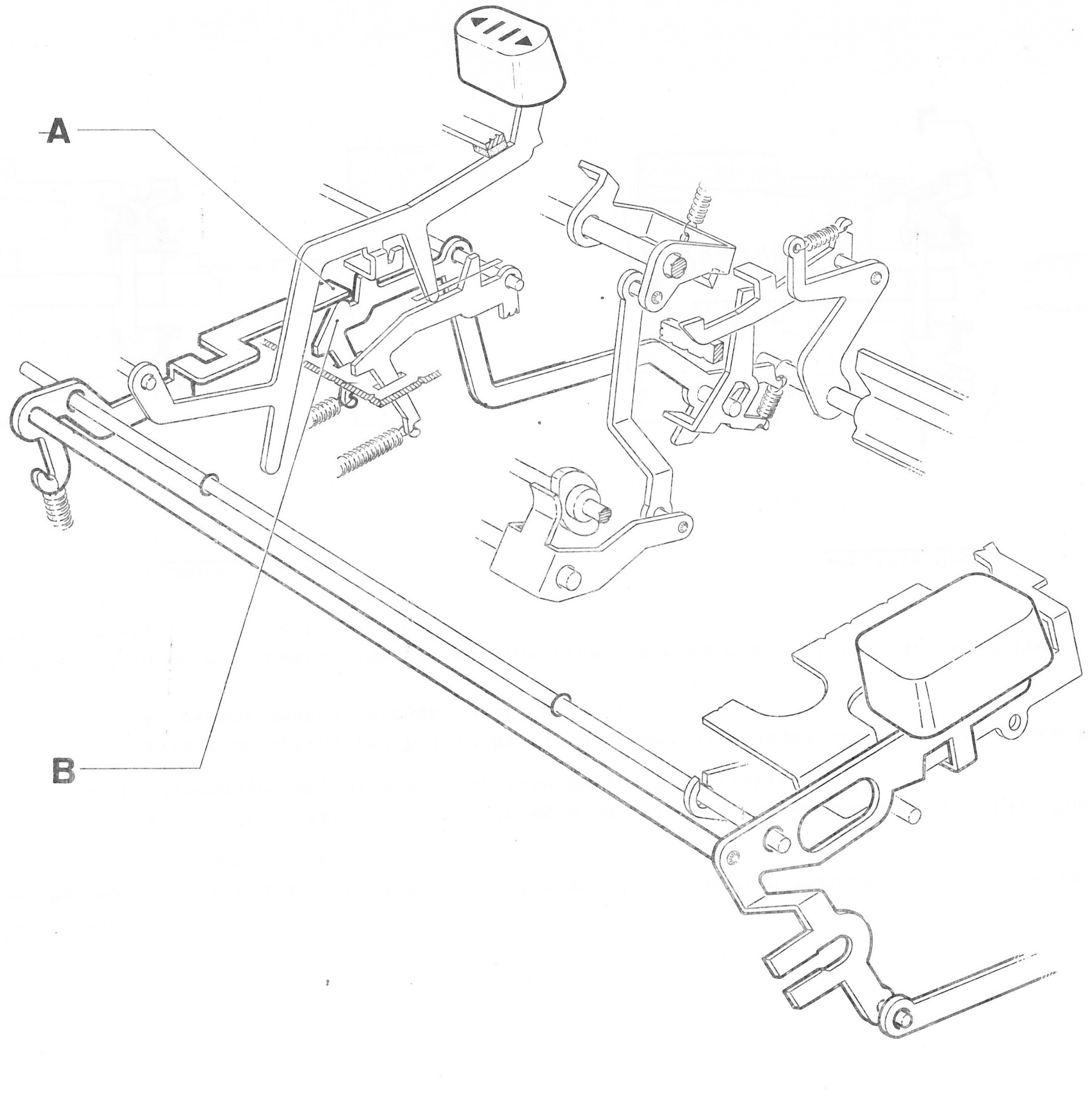
When the Variable (3) is pushed towards the Platen, the Line Space Ratchet (1) is disengaged from the Platen Knob (2). The Platen, therefore, is free to rotate.

Variable Closed



Variable Open




A
B

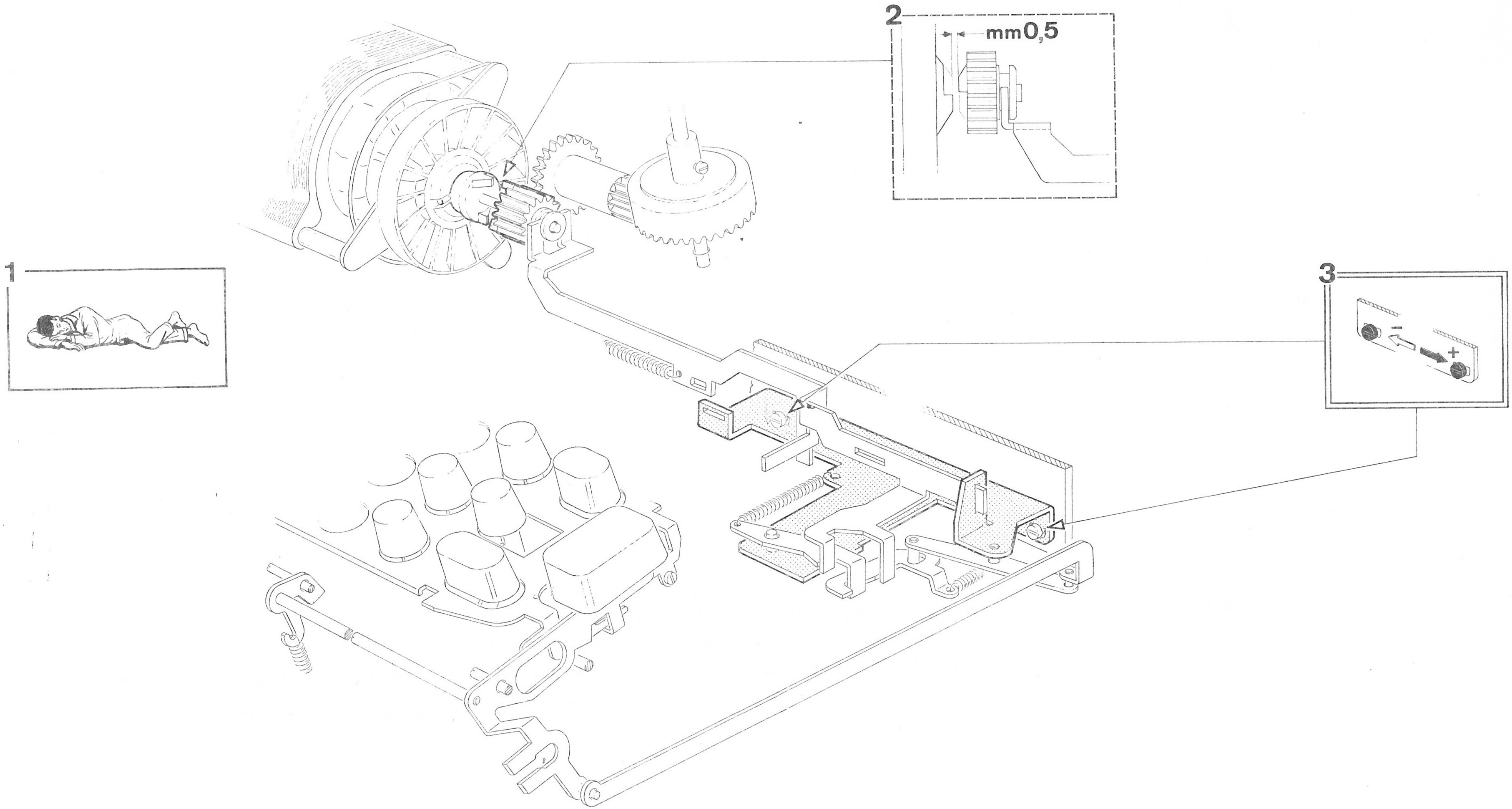
Reactivation of the Keyboard by Carriage Return

When the Keyboard has been deactivated because of the simultaneous depression of two Character Keys, it is also possible to reactivate the Keyboard by depressing the Carriage Return Key.
When the Carriage Return Key is depressed, Plate (A) acts upon Lever (B) of the release mechanism.

L-33 ① L-26 P-13
P-14 P-17

Checking the Clearance between the Carriage Return Pinion and the Motor Fan Lugs

By depressing the Carriage Return Key, the condition illustrated on page L-5 (panel 8) must take place.



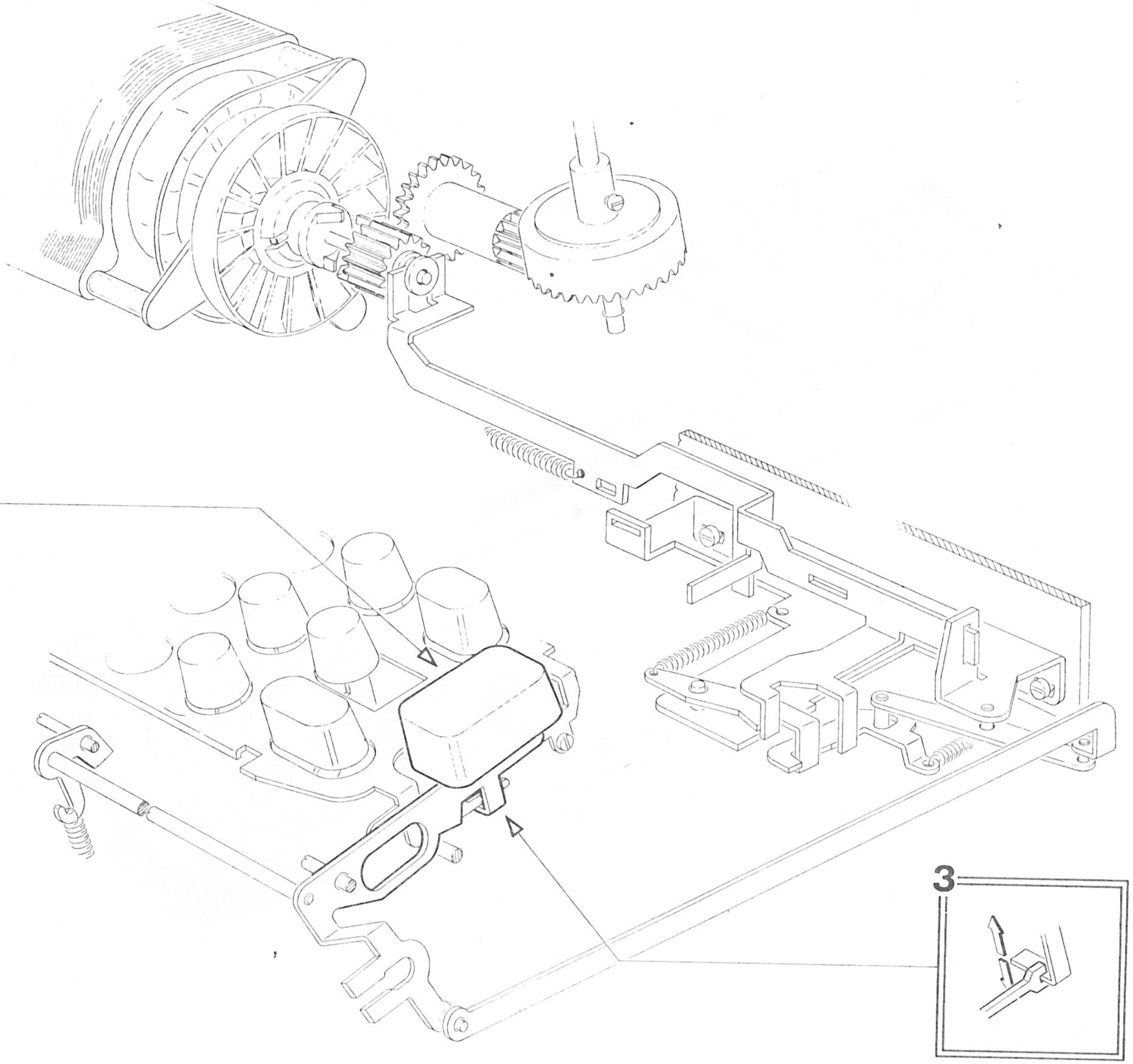
B-20 ②

Checking the Disengagement of Carriage Return

When depressing the Carriage Return Key, the following must occur in this order: 1) Empty Travel; 2) Resetting of the Pull Links; 3) Engagement between the pinions of the Carriage Return; 4) Empty Extra Travel.

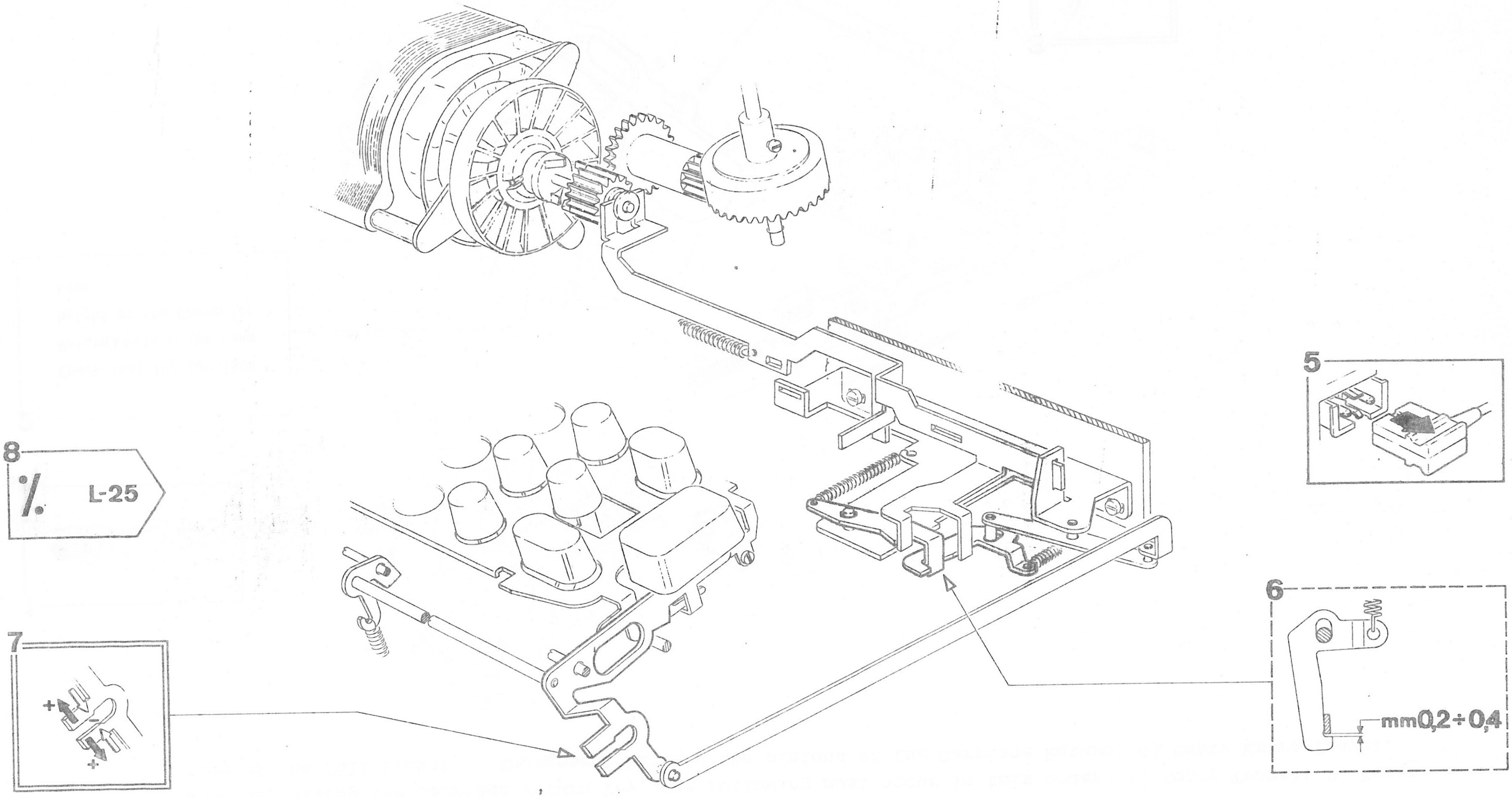
2

Check that the Carriage Return key is at the same height as the Character Keys

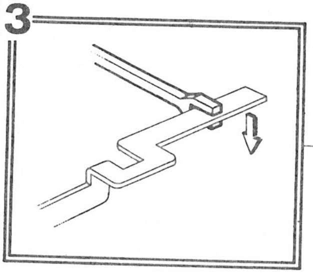


4 % L-24

Check the Disengagement of Carriage Return (continued)

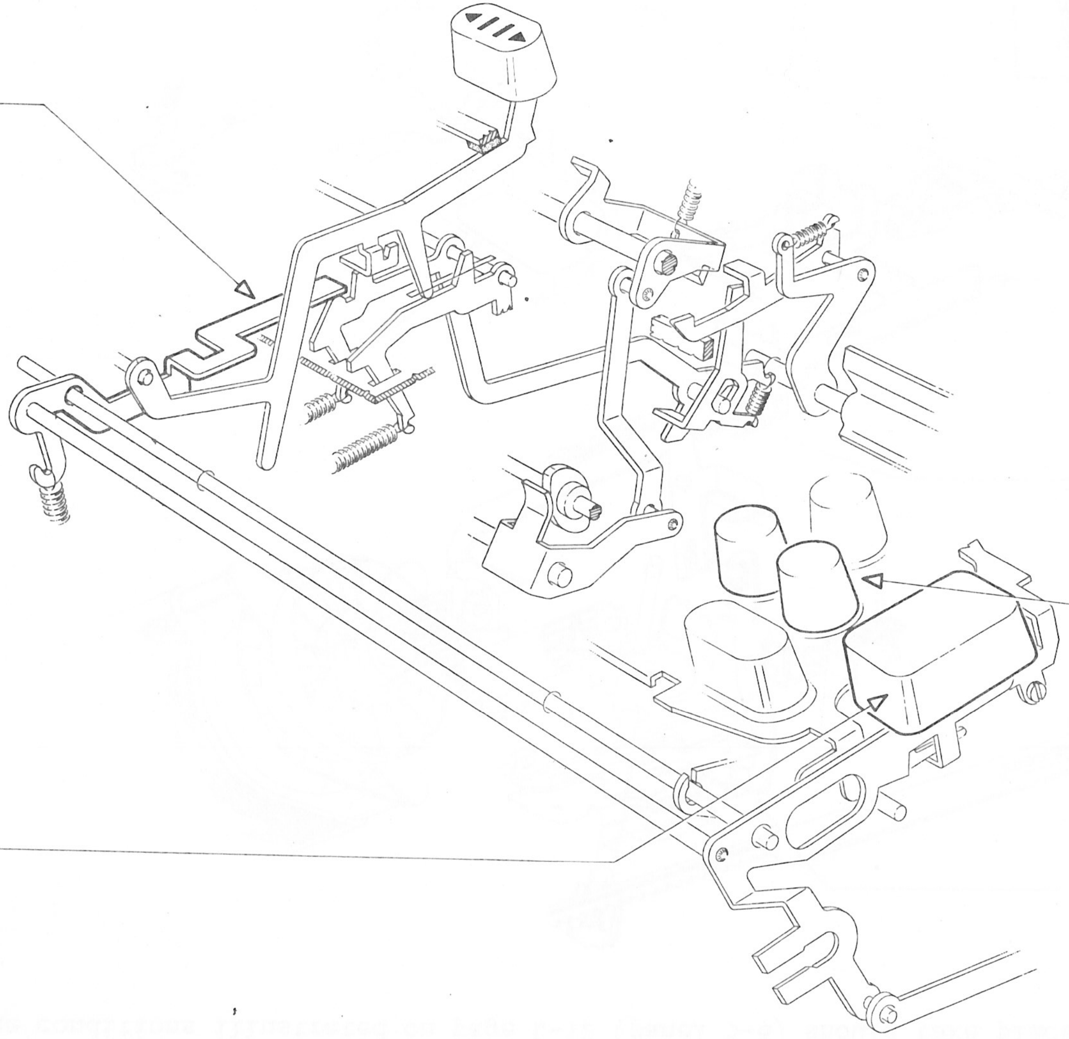

5
6
mm0,2÷0,4
7
+
-
+
8
%
L-25

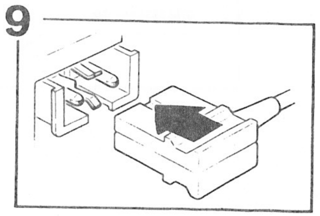
Checking the Disengagement of Carriage Return (continued)

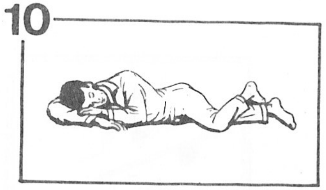


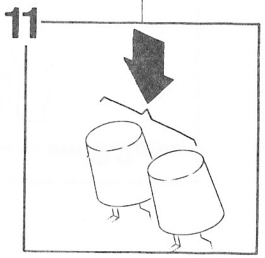
12

Depress the Carriage Return Key slowly and check that the Pull Links are reset as early as possible with respect to the beginning of Carriage Return





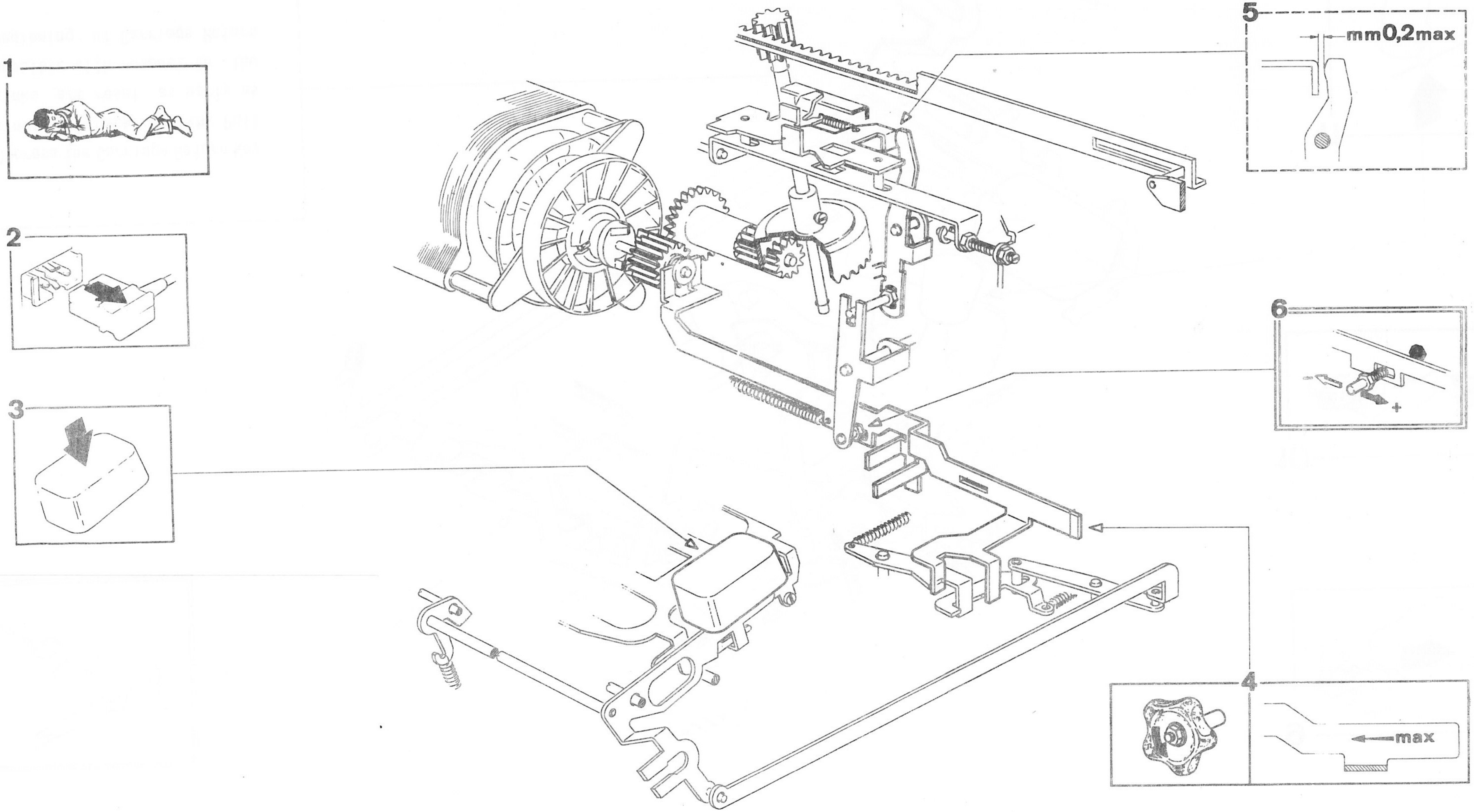




M-14
M-16
③
P-17

Checking the Reset during Carriage Return

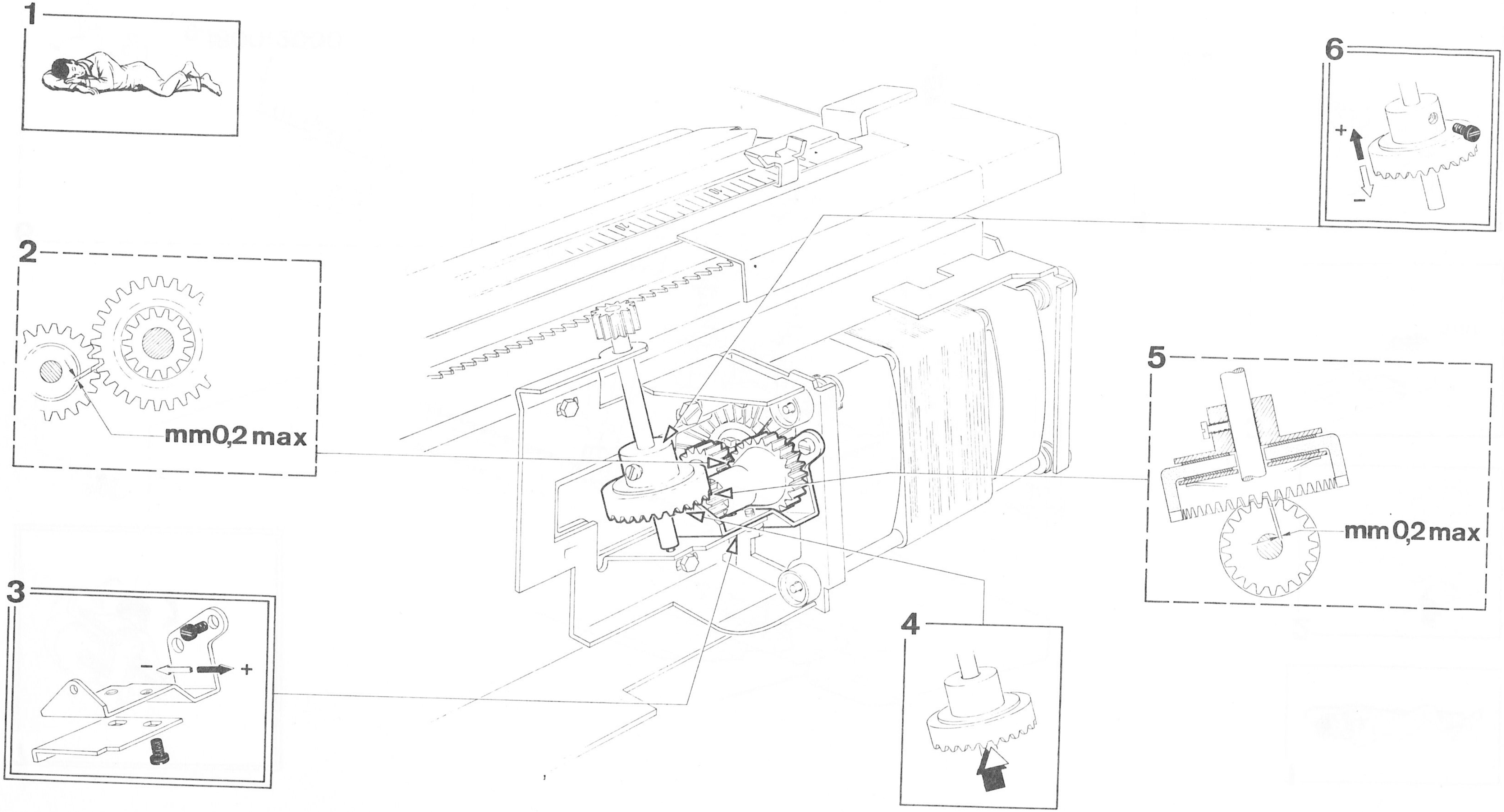
When, following depression of the Carriage Return Key, the Carriage reaches the "Banking" position, the conditions illustrated on page L-12 (panel 5-6) should take place.



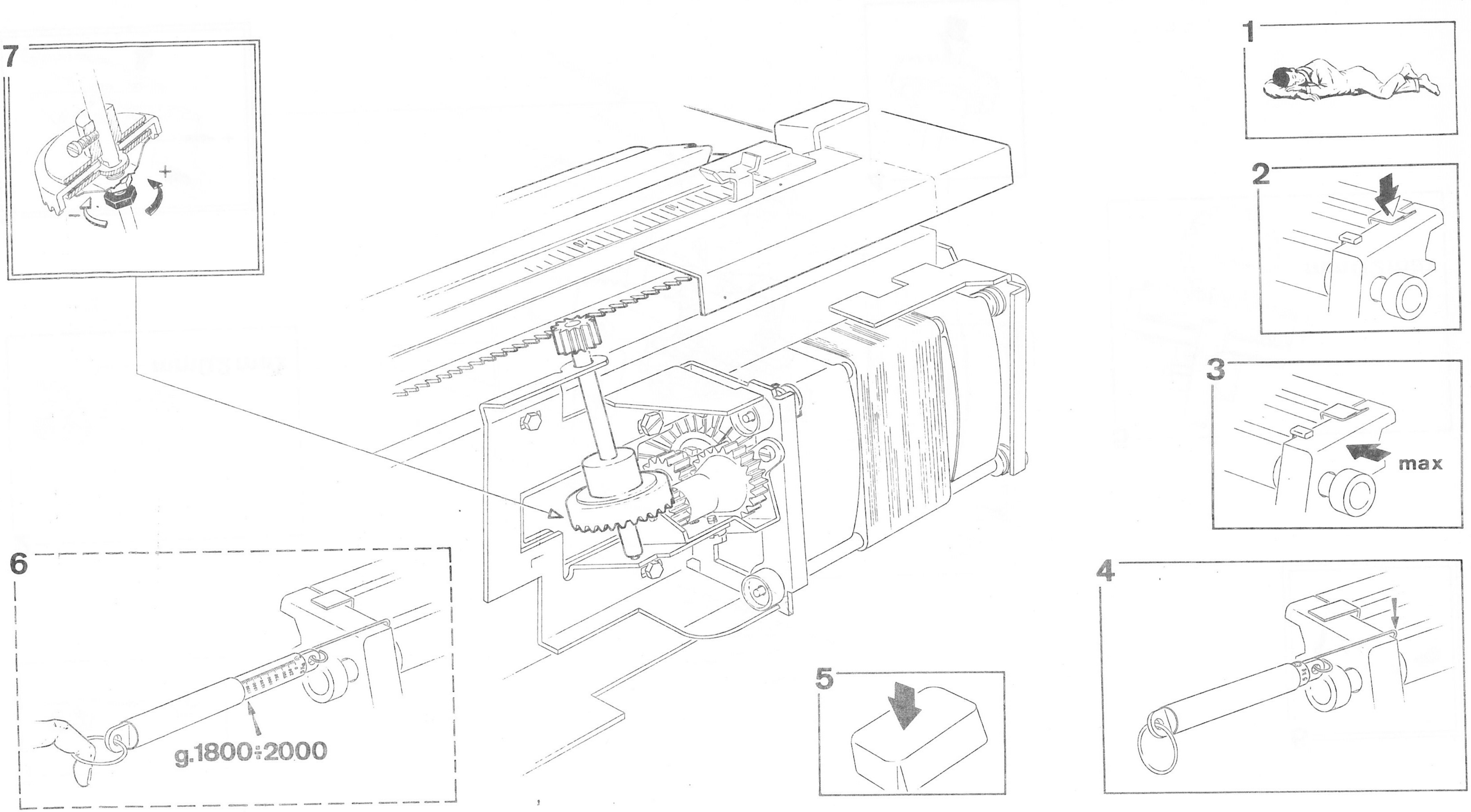
Note - In the event that this condition cannot be obtained, modify the position of the upper stud also.

④ L-28

Checking the Meshing of the Carriage Return Gears


1
2
mm0,2 max
3
−
+
4
5
mm0,2 max
6
+
−

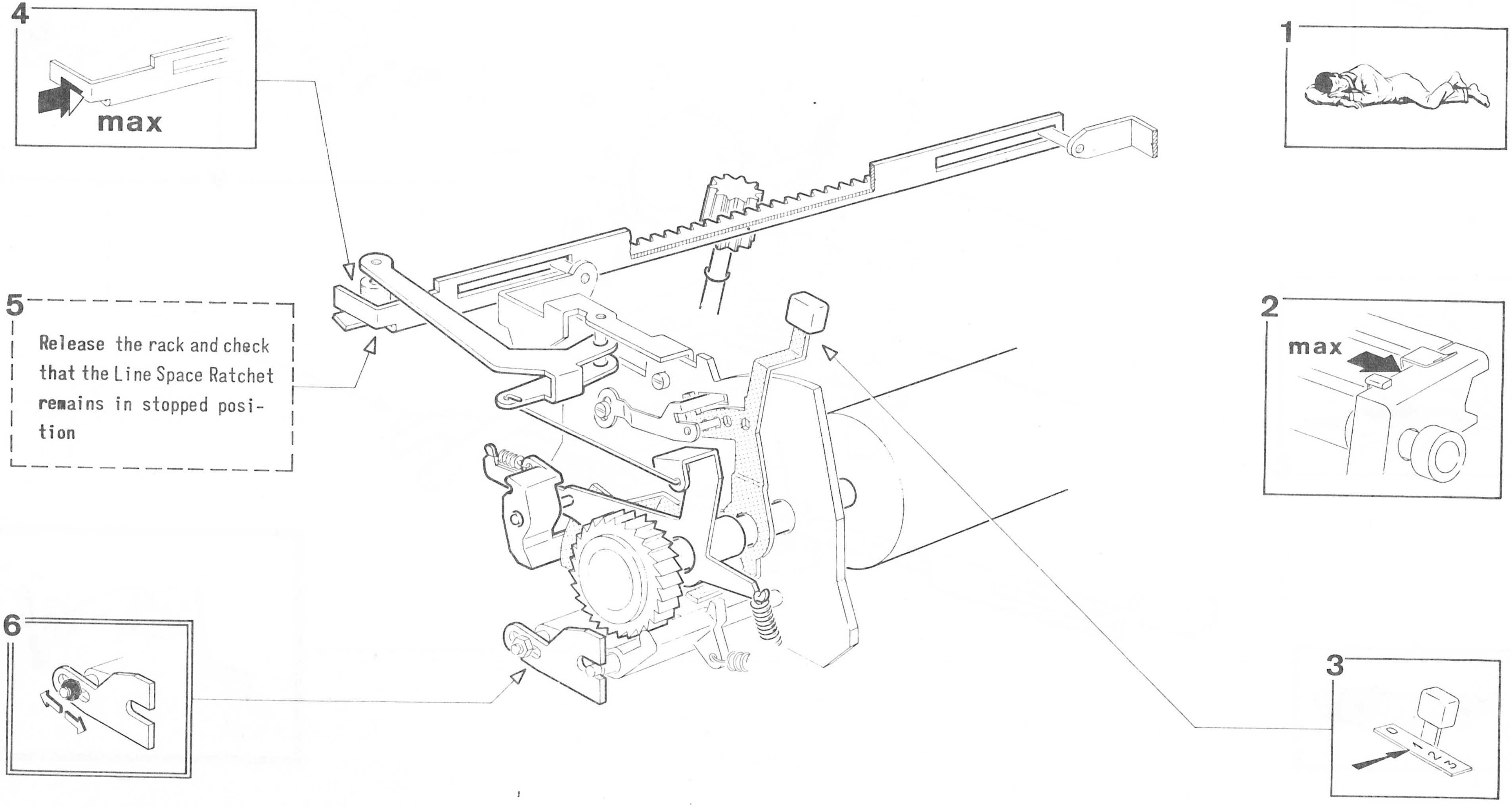
⑤ Checking the Tension of the Carriage Return Clutch


7
+
−
1
2
3
max
4
6
g.1800÷2000
5

Note - This check requires use of a tension gauge.

⑥ Checking the Platen's Angular Positioning

In any angular position, Platen must be positioned by its own stabilizer.

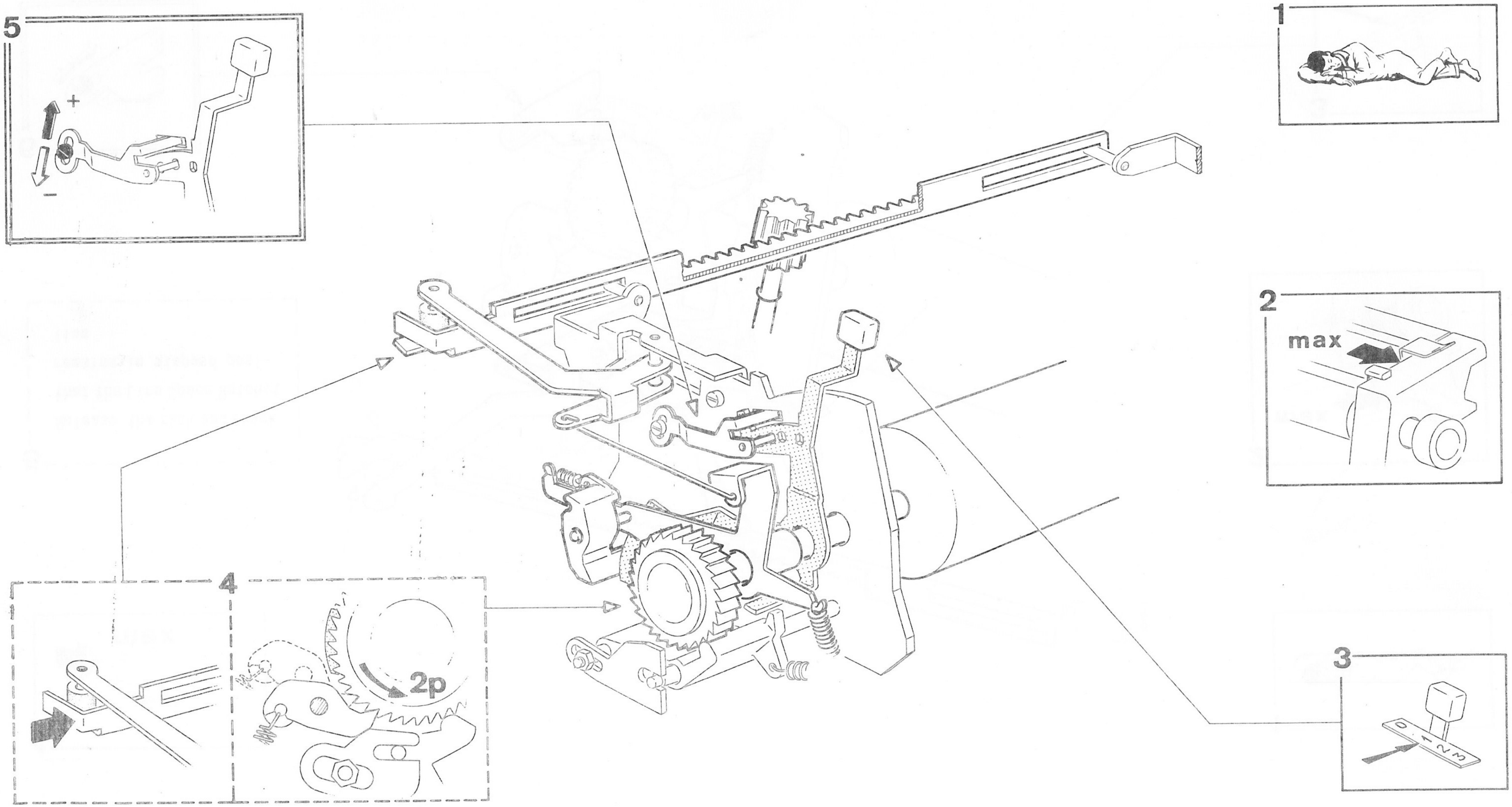


Release the rack and check that the Line Space Ratchet remains in stopped position

Note - This check requires the disassembly of the Left Carriage End cover and the Rear Carriage Cover.
This check must be repeated with the Line Spacing Selector Lever in each of its positions.

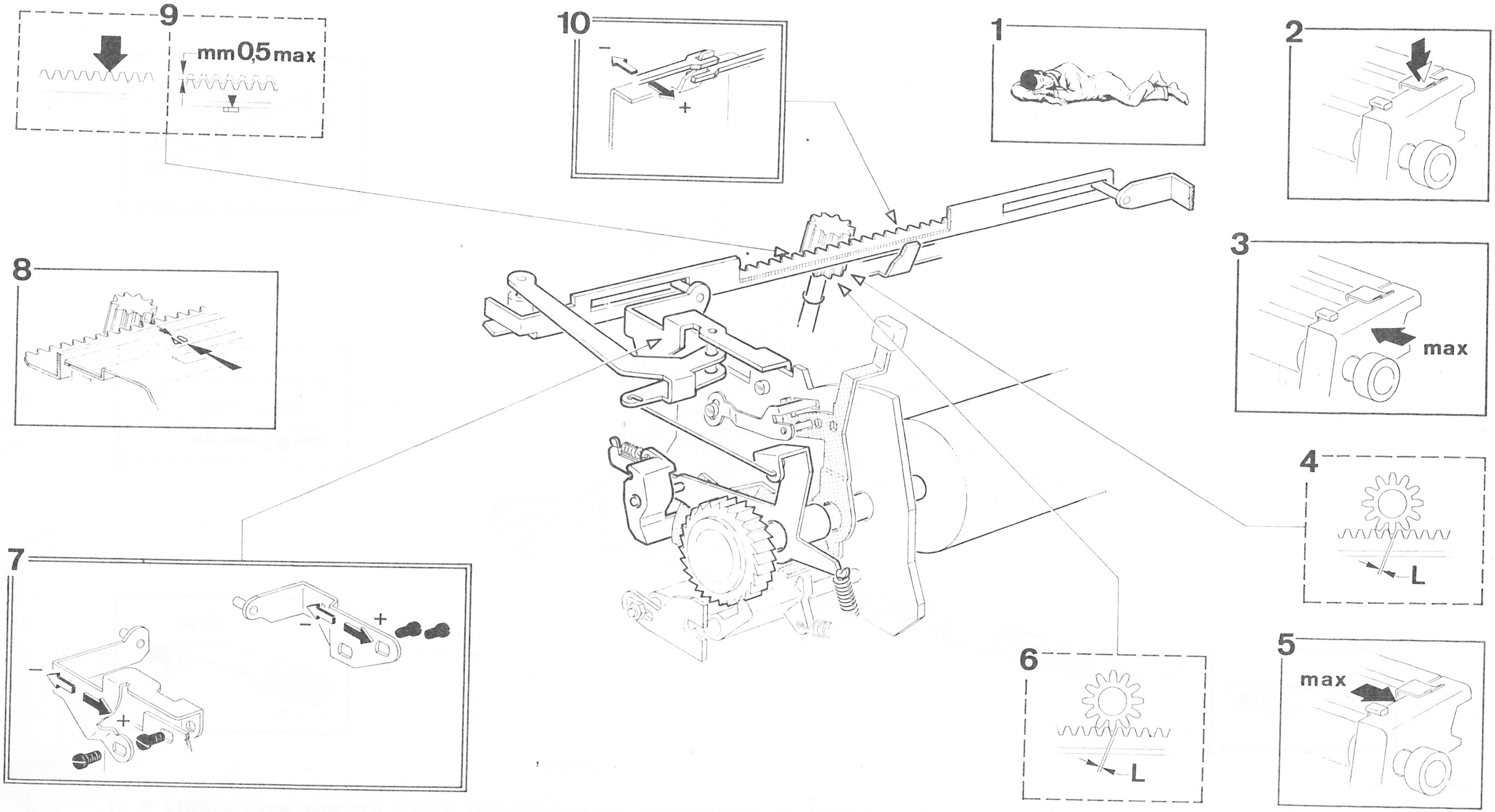
⑦ Checking the Quantity of Line Spacing

Depending on the position of the Line Space Selector Lever (1, 2, 3) the Line Space Ratchet must be rotated a corresponding amount (2, 3, 4 teeth).



Note - This check requires the disassembly of the Left Carriage End Cover and of the Carriage Rear Cover.
Repeat check with Selector in position 2 and 3.

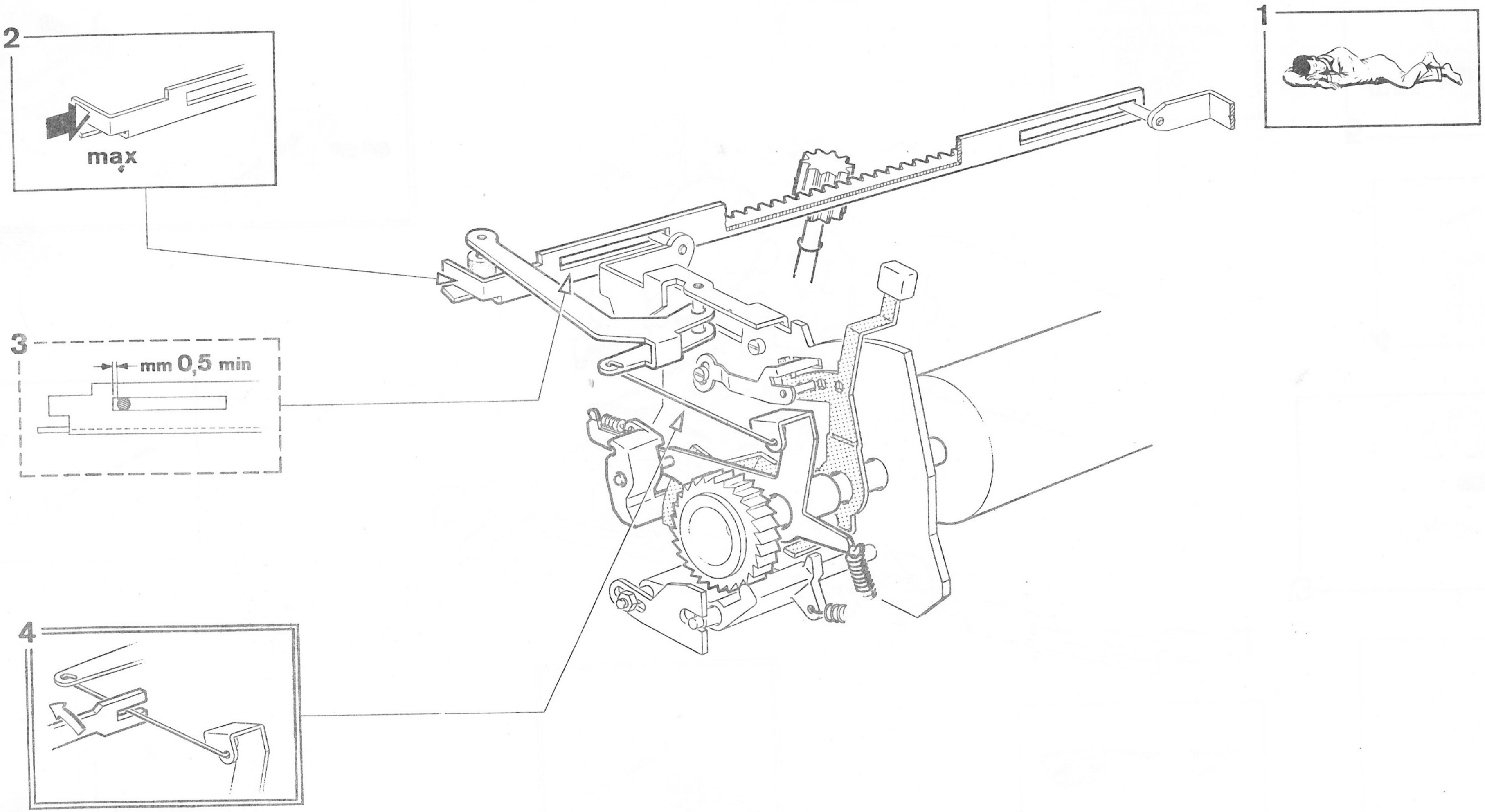
⑧ Checking the Meshing between the Line Space Actuating Rack and the Carriage Return Pinion


9
mm 0,5 max
10
–
+
1
2
3
max
8
4
L
7
–
+
–
+
6
L
5
max

Note - This check requires the Disassembly of both Carriage End Covers and of the Carriage Rear Cover.

⑨ Checking the Rest Position of the Line Space Actuating Rack

In a single Line Spacing Cycle the conditions illustrated on page L-9 (panels 2 and 7) must take place.



Note - This check requires disassembly of the Left Carriage End of Carriage Rear Cover, furthermore, the left retaining clip which holds the rack must be removed.

Attention - In case of repair, the link must maintain a continuous arched form, instead of a sharp edge.

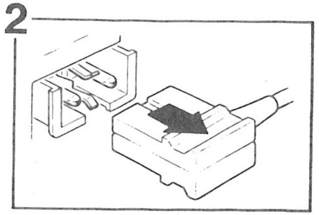
⑩ L-22

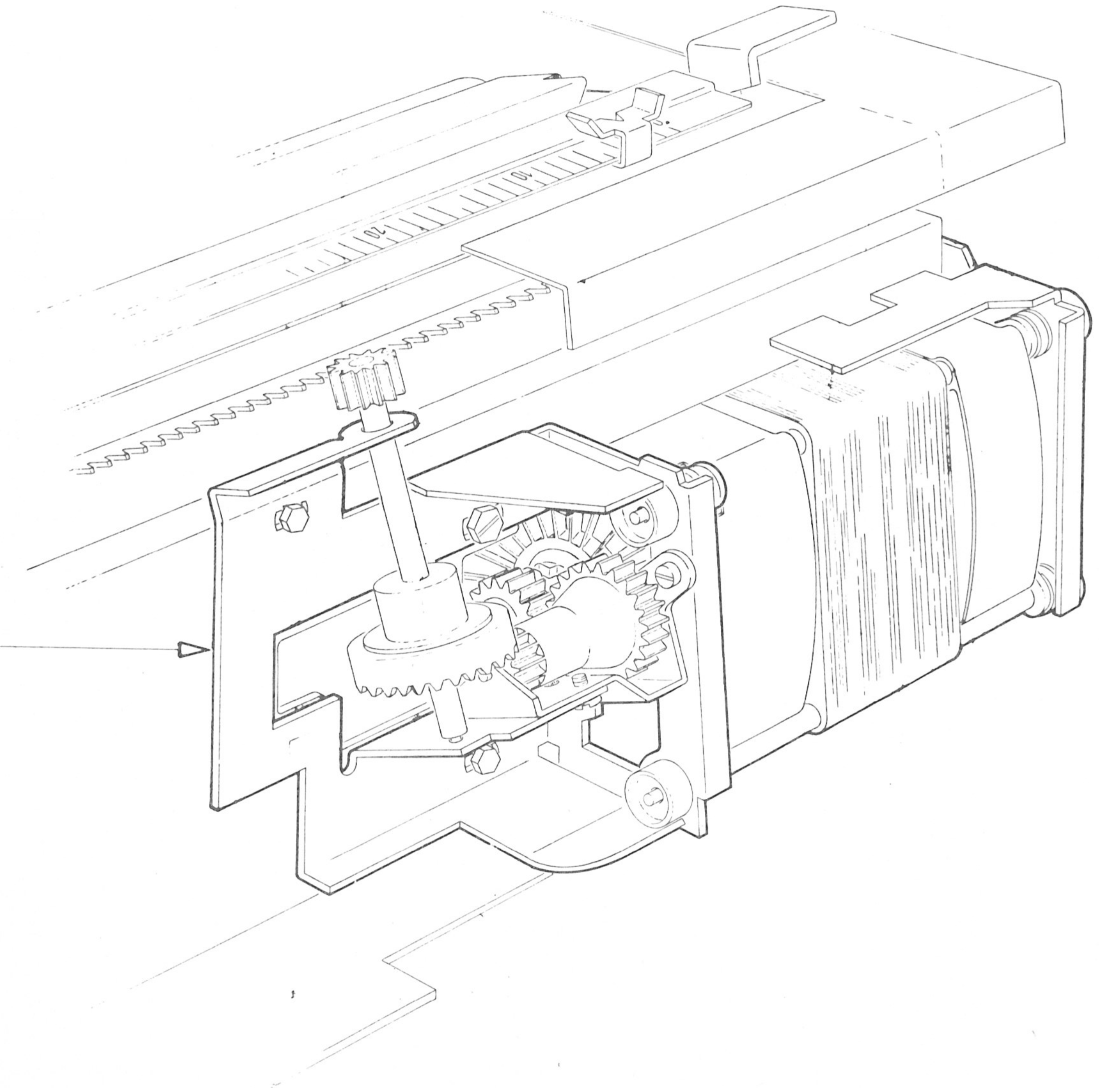
Checking the Position of the Motor

The motor has to be firmly held between its side frames, without lateral play and without compressing its holding rubbers.

1

2

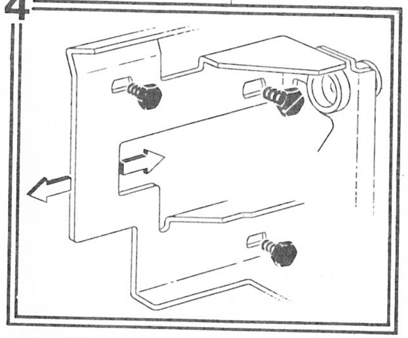




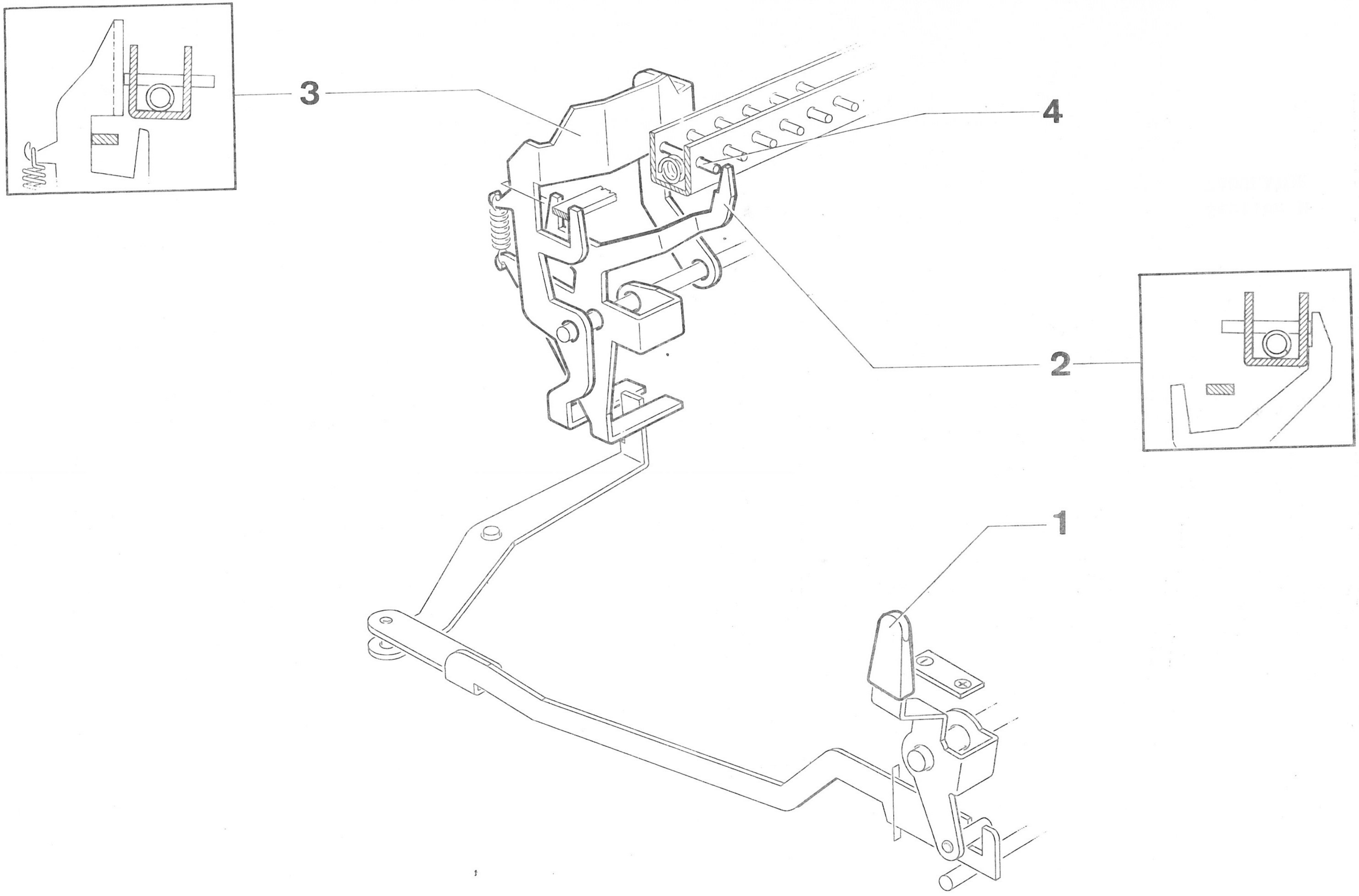
3

Check that the motor has no play between its side frames (No compression of the holding rubbers is allowed)

4



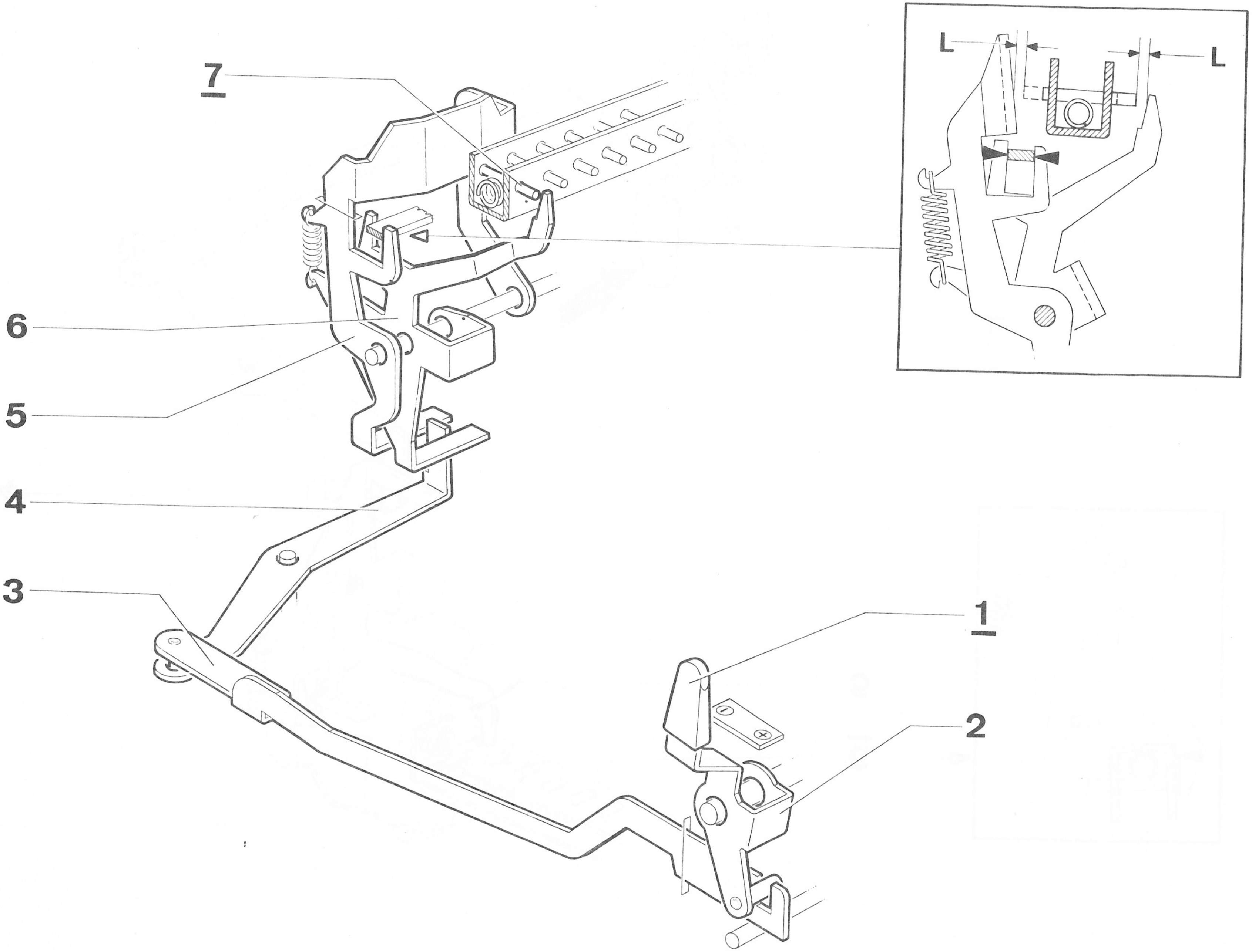
Section M
TABULATOR

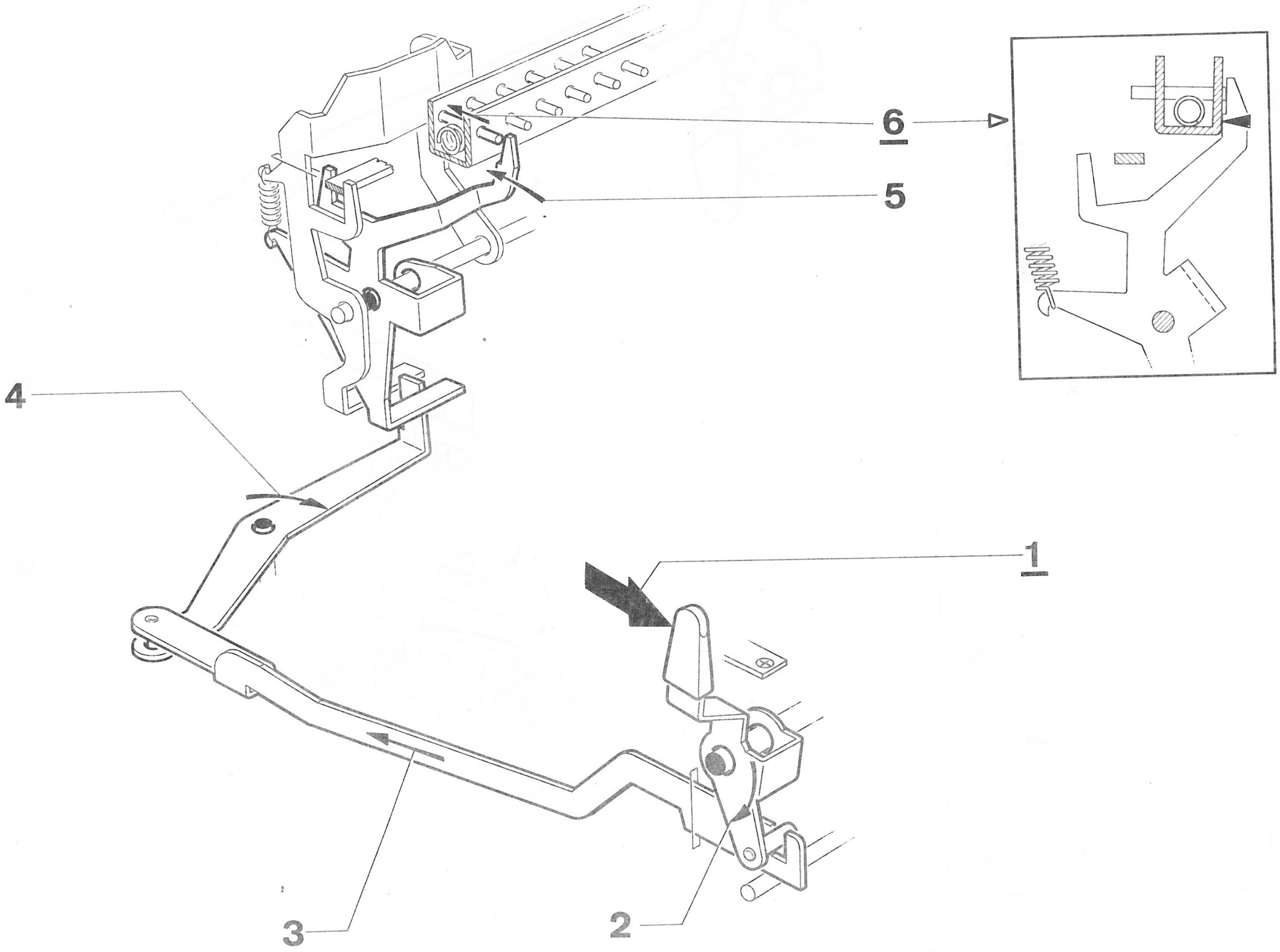


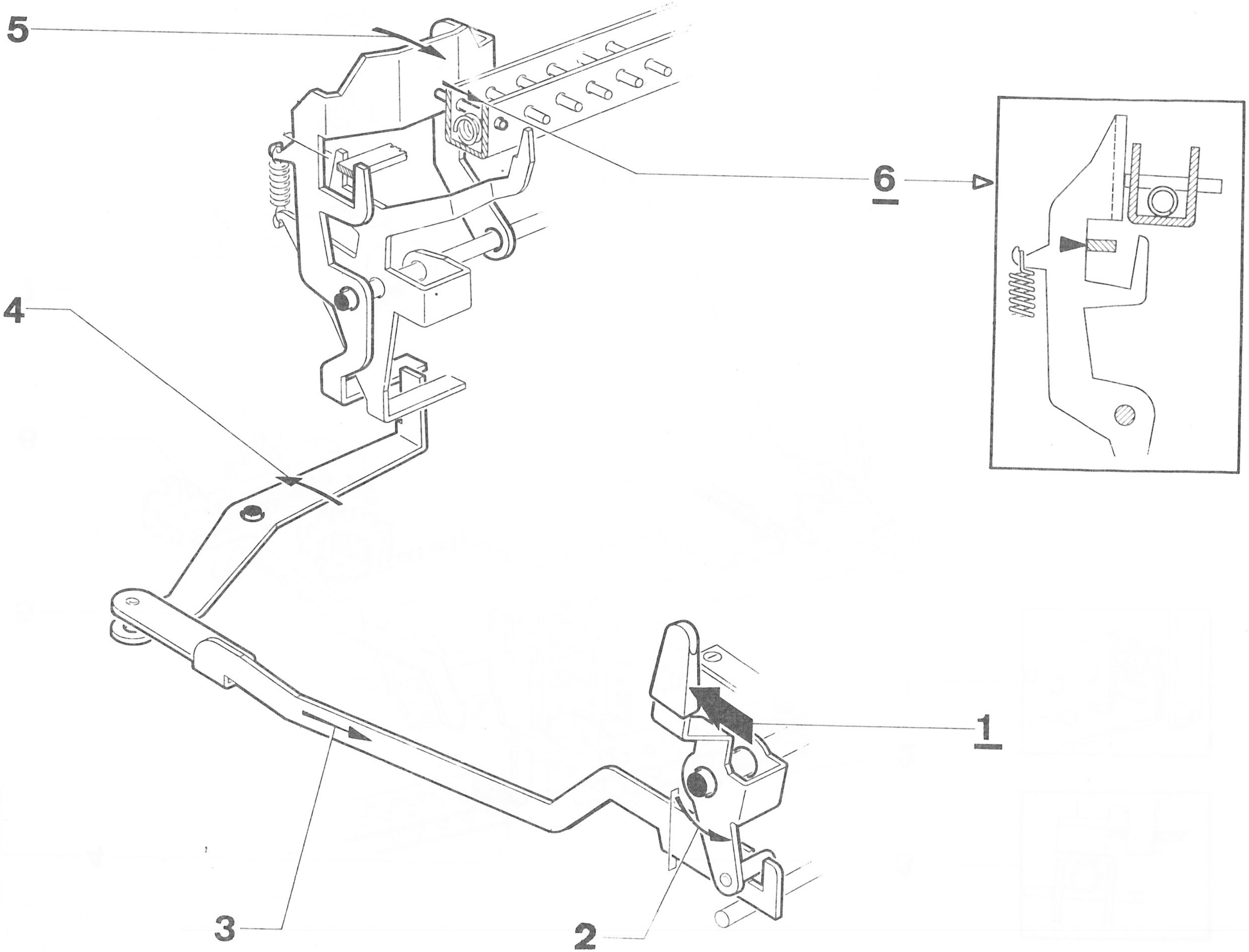
Tabulator Stop Set and Clear

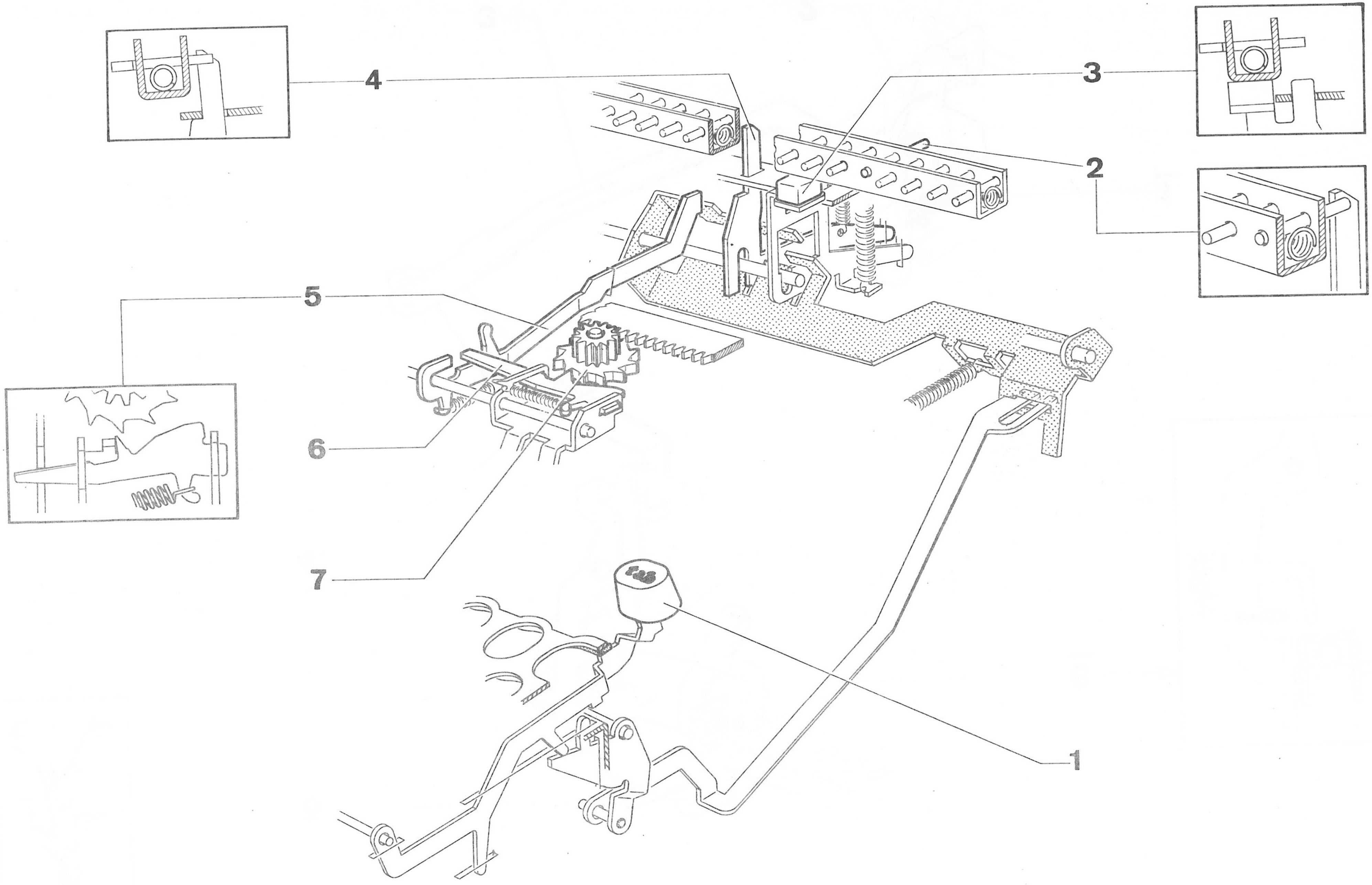
The Tabulator Stops are set and cleared by means of a lever.

- when Lever (1) is rotated towards the front (Keyboard), Lever (2) sets a Stop (4)
- when Lever (1) is rotated towards the rear (platen), Clear Plate (3) clears the Stop (4).


L
L
7
6
5
4
3
1
2
–
+


6
5
4
1
2
3


5
4
6
1
3
2



Tabulator

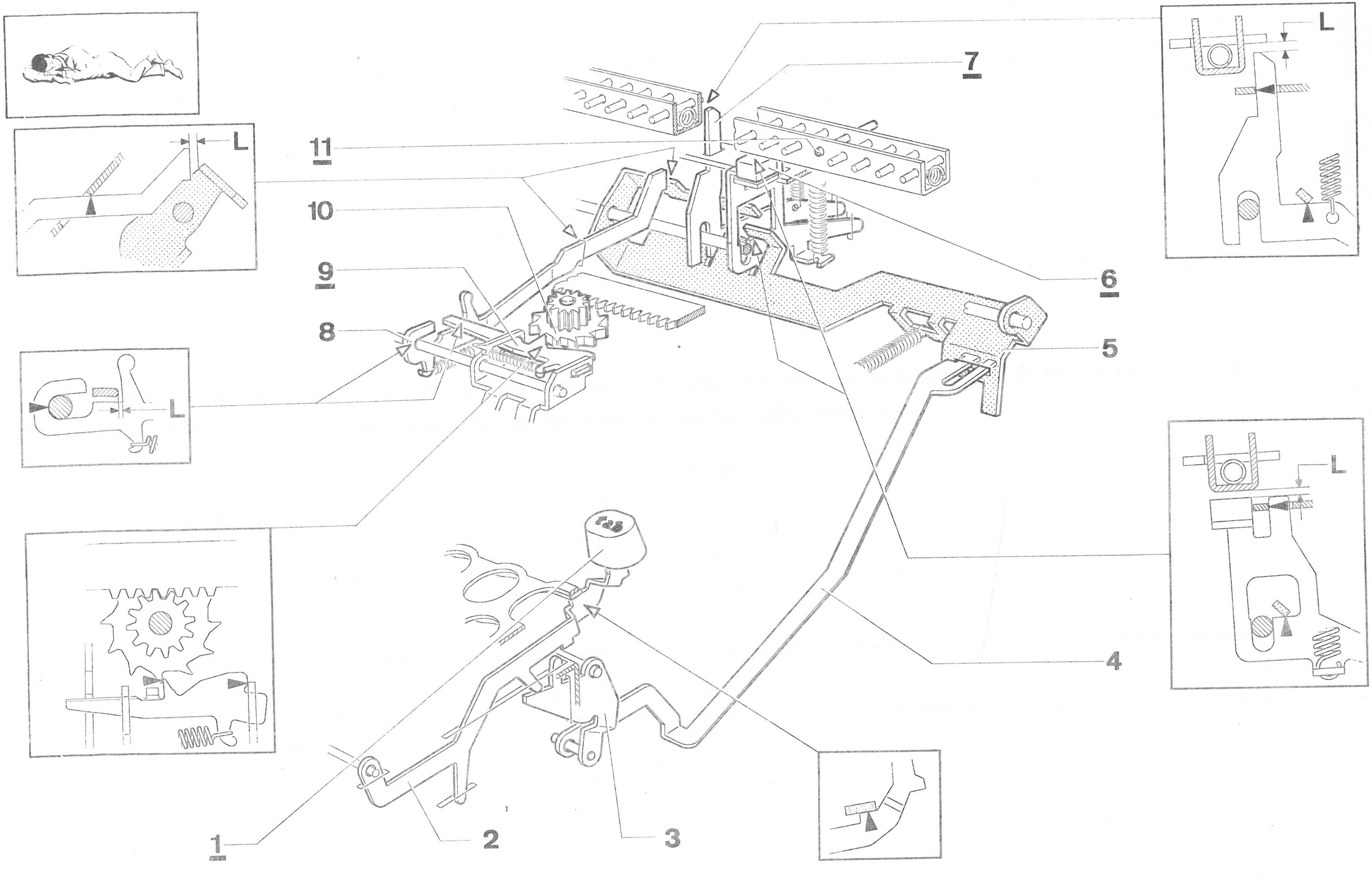
When the Tab Key (1) is depressed and held down, the Carriage travels slowly towards the left until is stops at the first set Tab Stop.

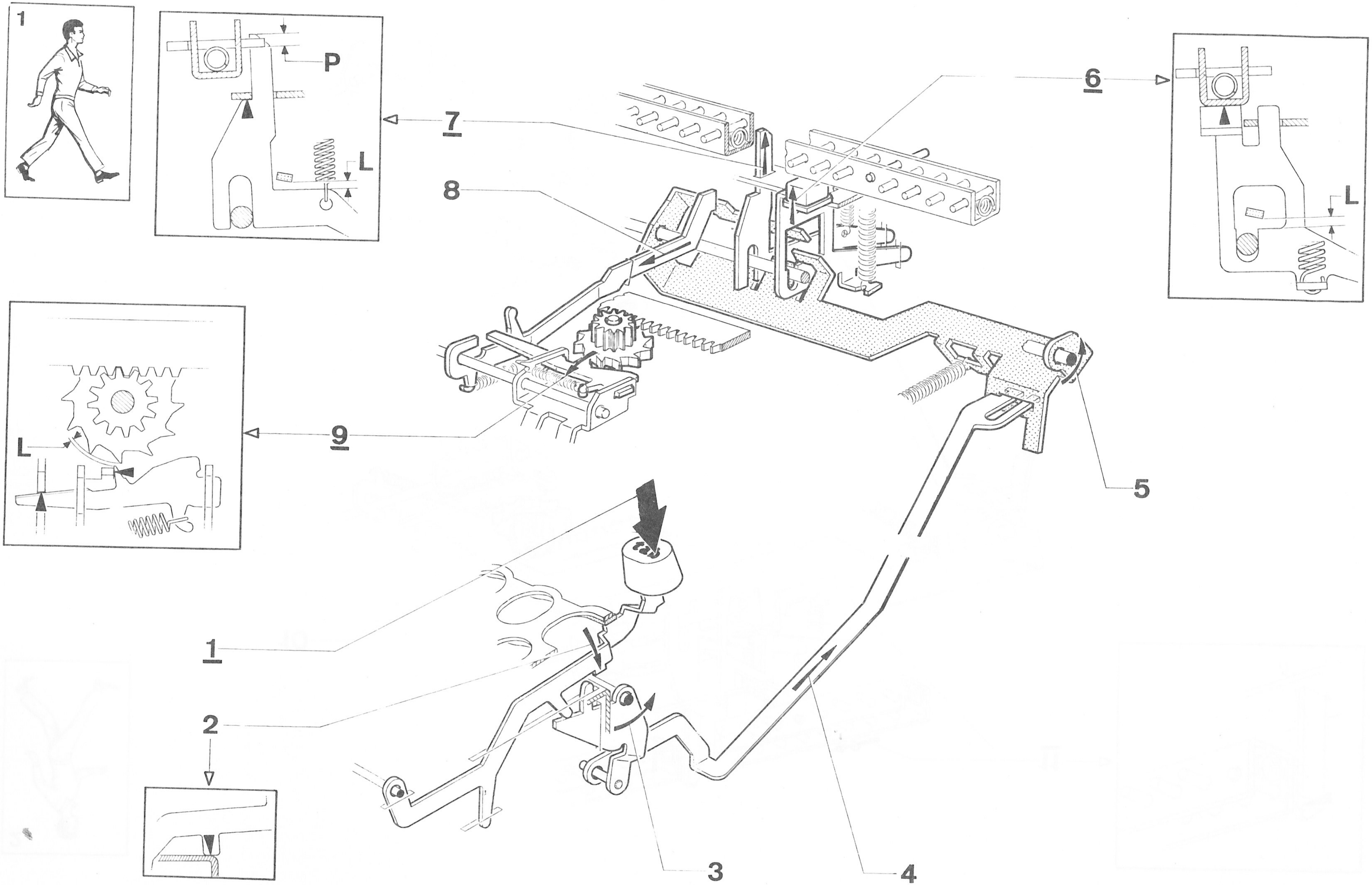
When holding Key (1) down:

- Stop Blade (4) moves in the path of Stop (2)
- Brake Shoe (3) contacts the Tab Stop Retainer
- Link (5) disengages the Loose Dog (6) from the Escapement Wheel (7).

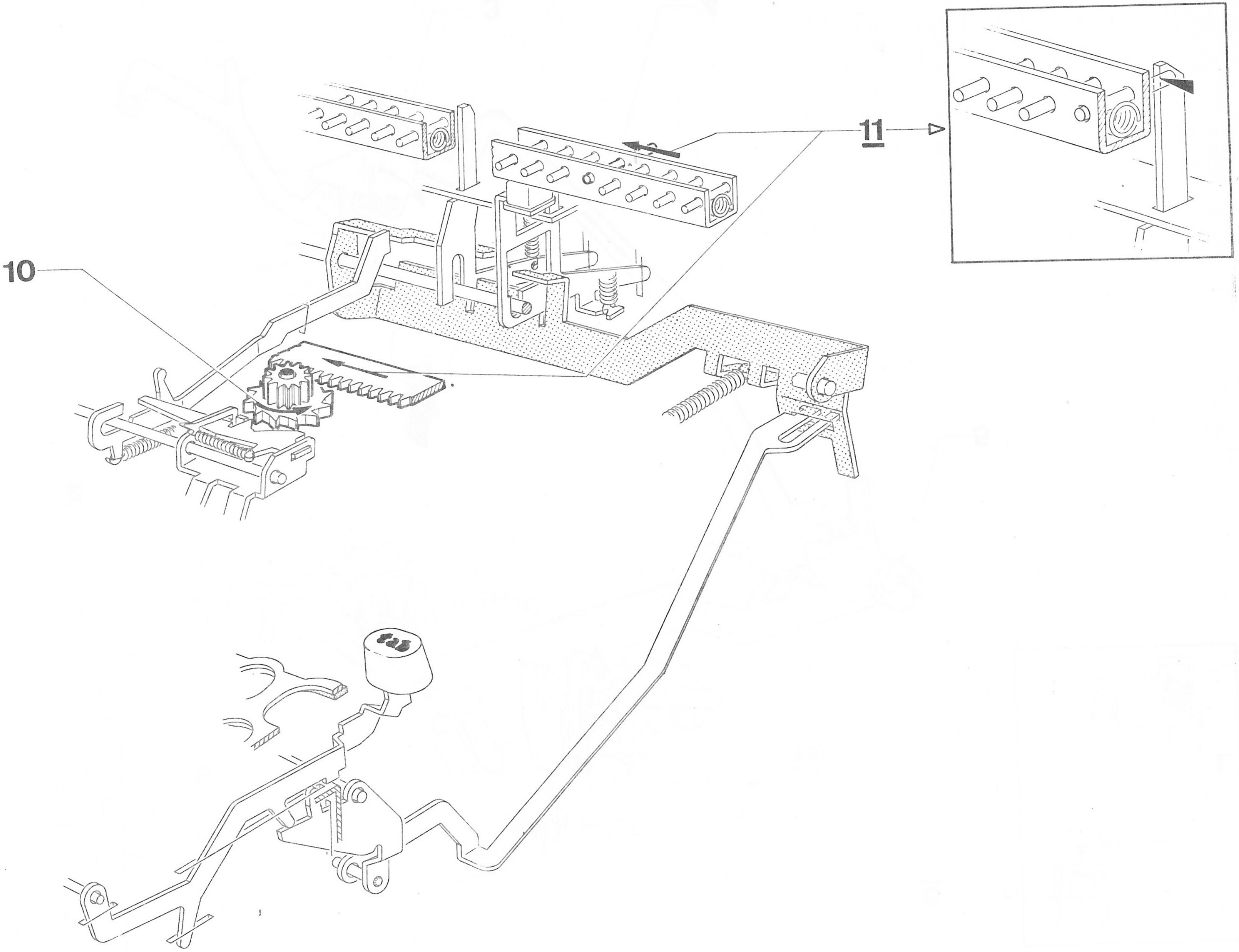
Consequently, the Carriage, in motion, brings Stop (2) against Stop Blade (4).

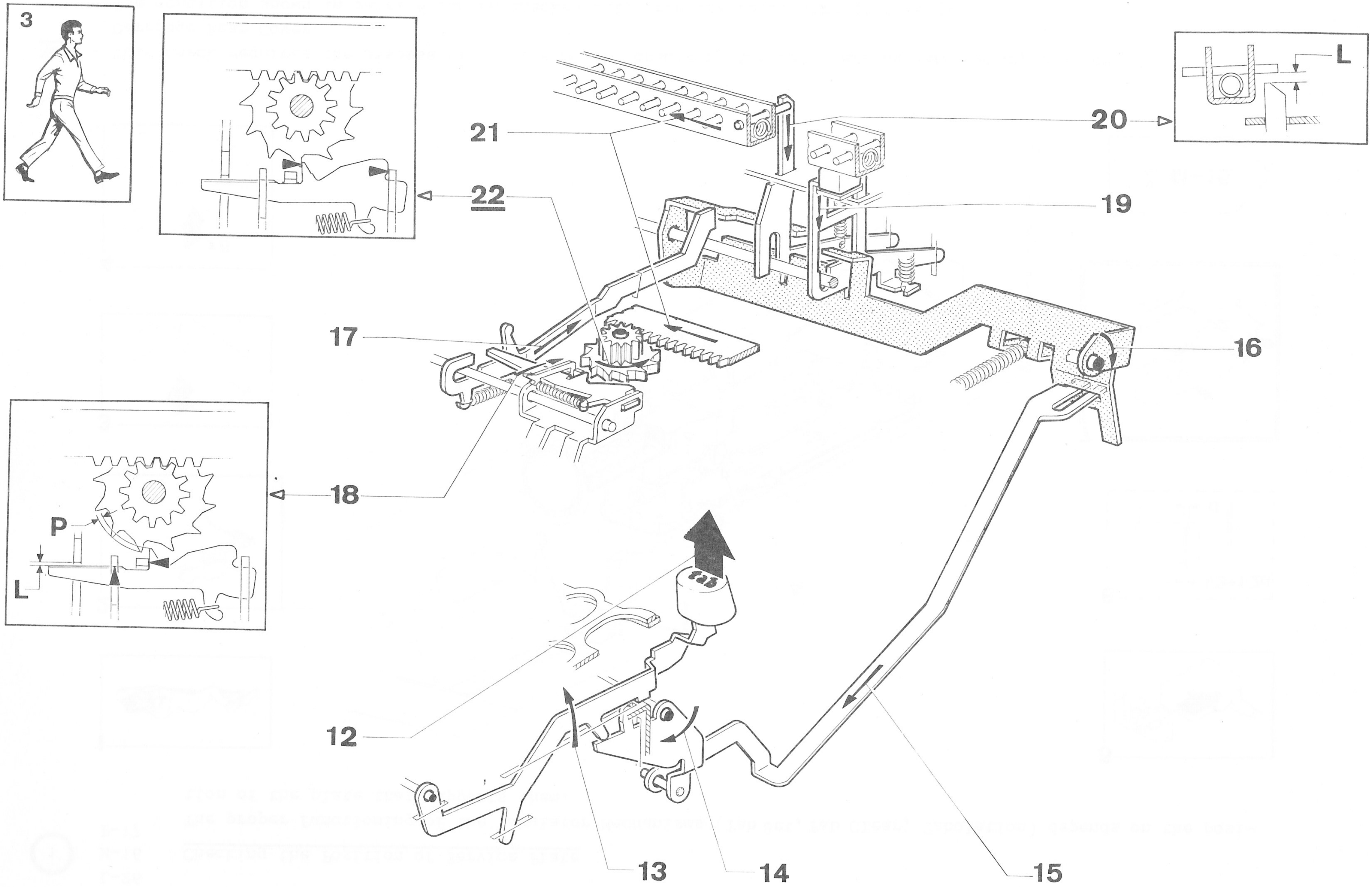
When the Tab Key (1) is released, the Carriage moves slightly leftward to stop again, held by the Loose Dog (6).


L
L
L
L
tab


P
L
L
L

2

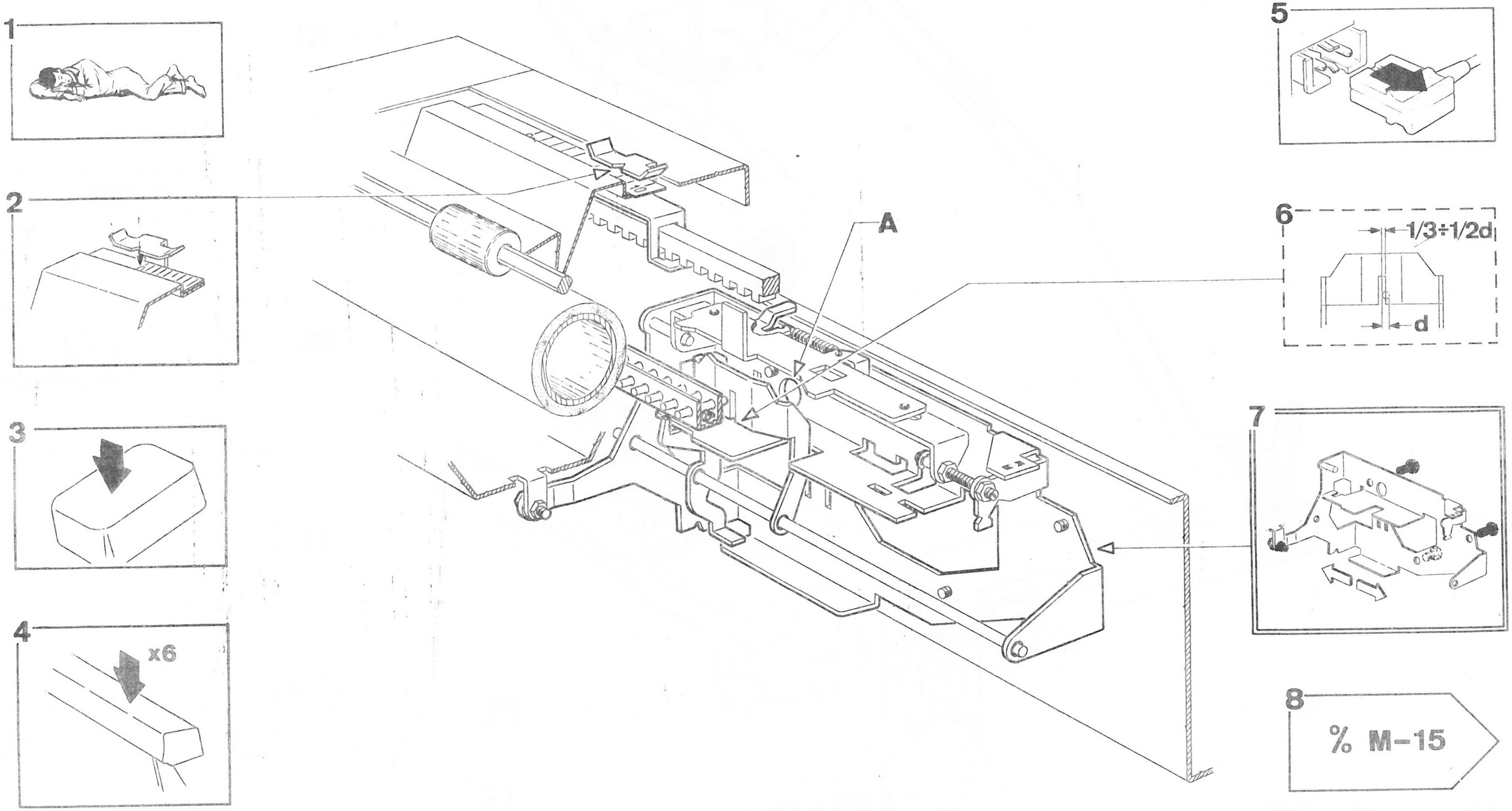

10
11


L
P
L

① L-26
M-16
P-17

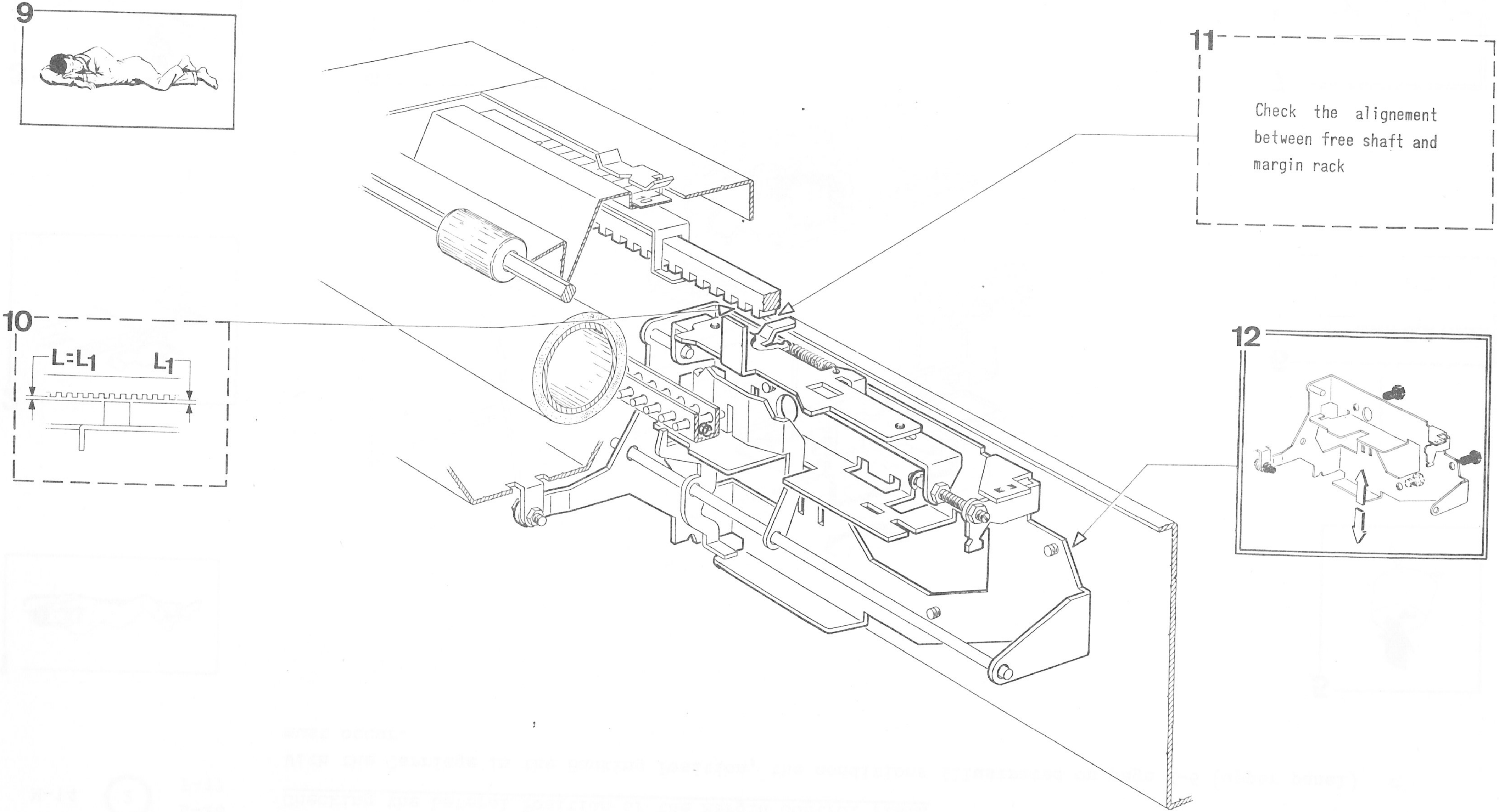
Checking the Position of Service Plate

The proper functioning of the Tabulator Mechanisms (Tab Set, Tab Clear, Tabulation) depends on the position of the plate that supports them.



Note - This check requires the disassembly of the Motor Capacitor, the Left Carriage End Cover, and the Carriage Rear Cover.
The condition shown in panel 6 can be checked only from the rear, through hole A.

Checking the position of the Service Plate (continued)

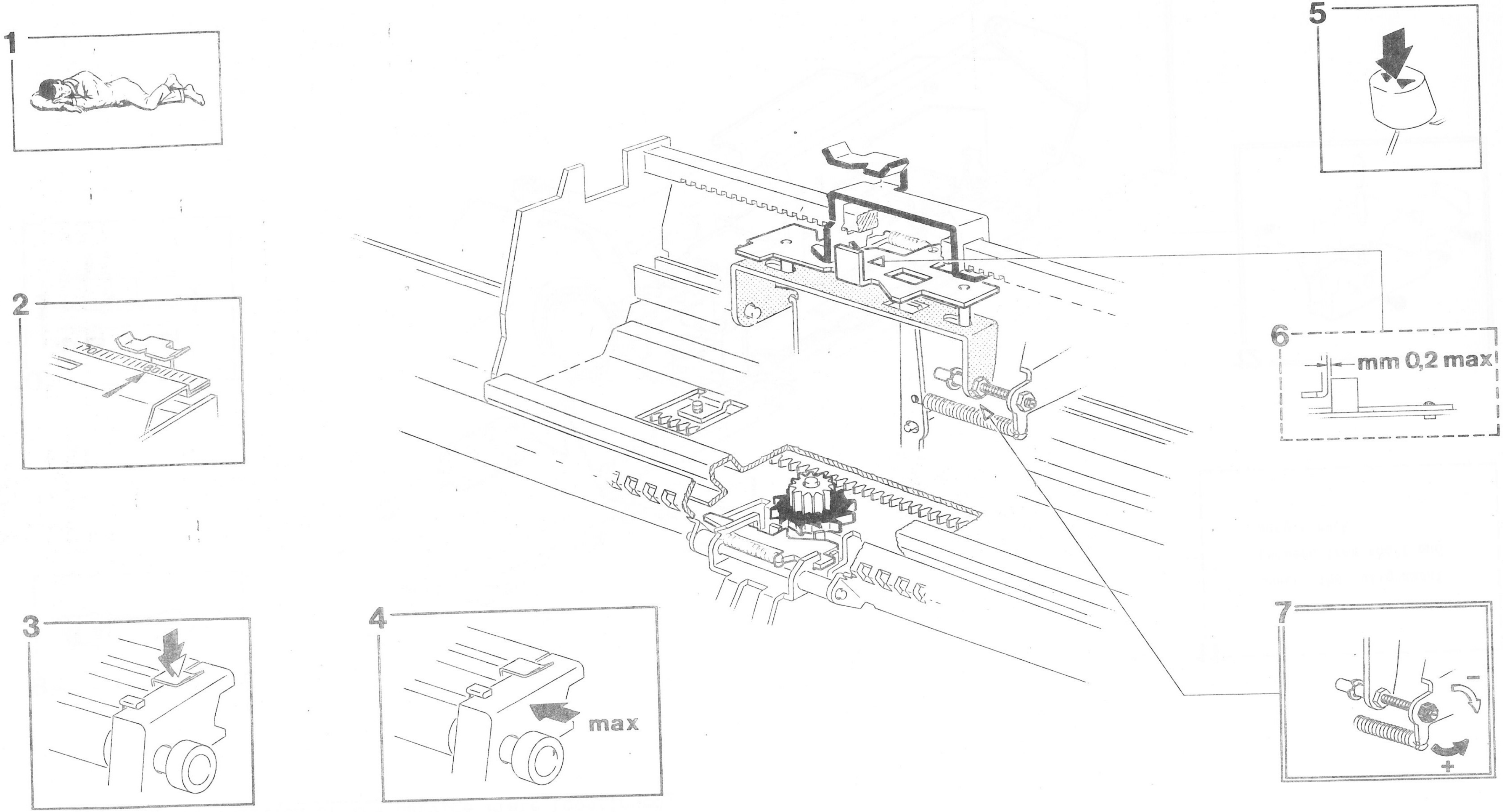

9
10
L=L1
L1
11
12

Check the alignement between free shaft and margin rack

M-14 ② L-26
P-17

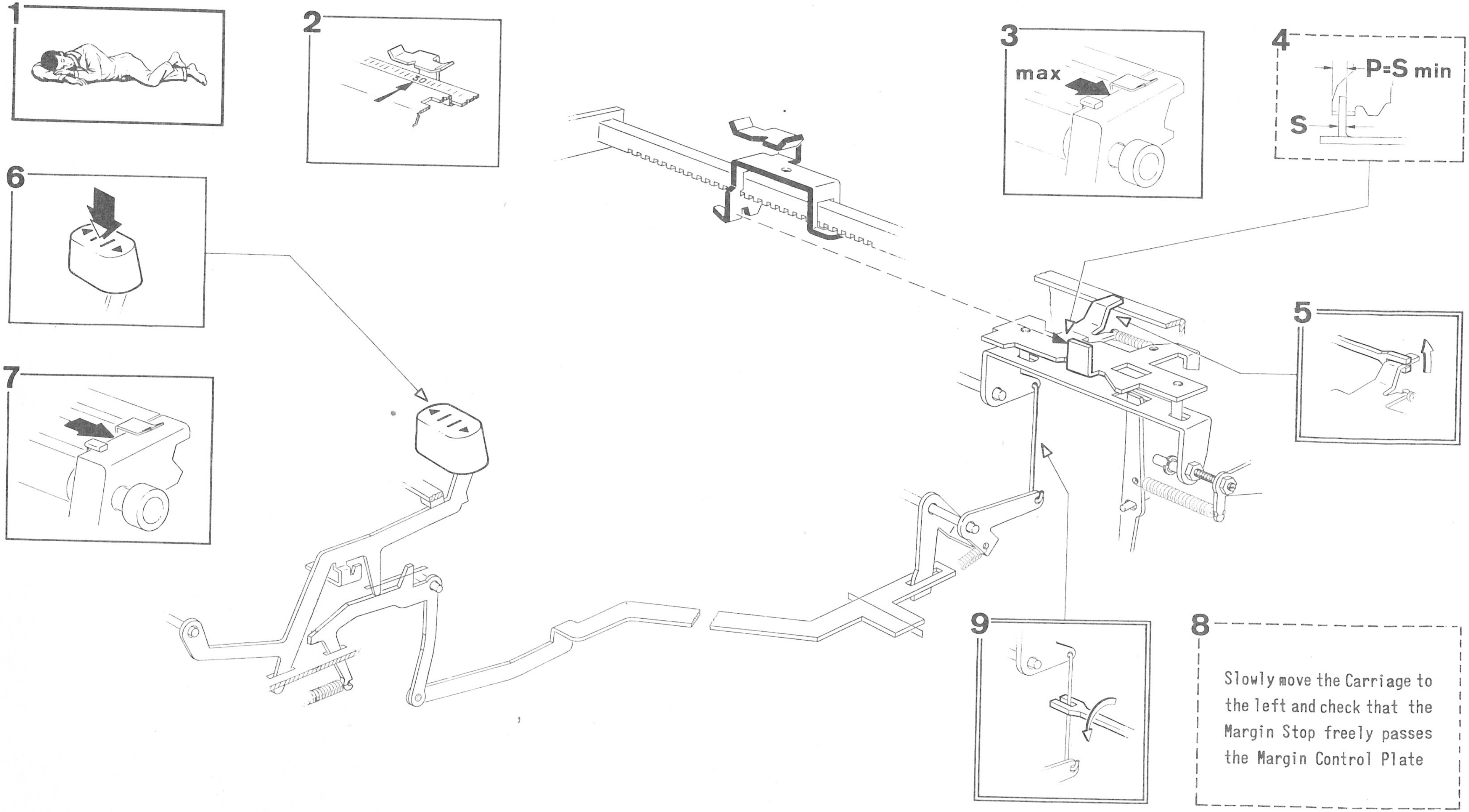
Checking the Lateral Position of the Margin Control Plate

With the Carriage in the Banking Position, the conditions illustrated on page K-6 (upper panel) must occur.


1
2
70
80
3
4
max
5
6
mm 0,2 max
7
-
+

③ Checking the Angular Position of the Margin Control Plate

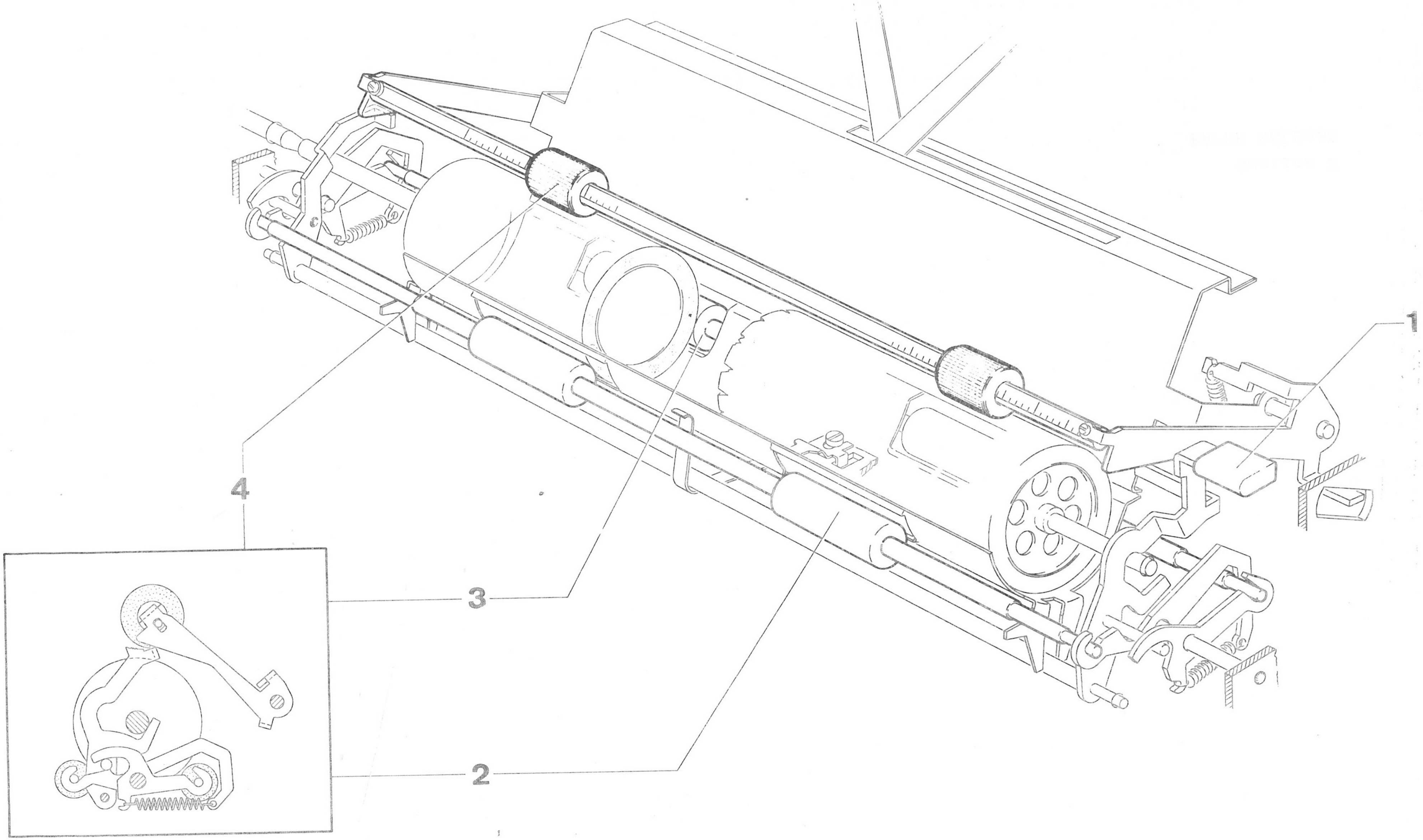
With the machine at rest, the conditions illustrated on page K-4 (upper panels) must take place.
With the Keyboard Release Key depression, the conditions illustrated on page K-12 must take place.



Slowly move the Carriage to the left and check that the Margin Stop freely passes the Margin Control Plate

Section N

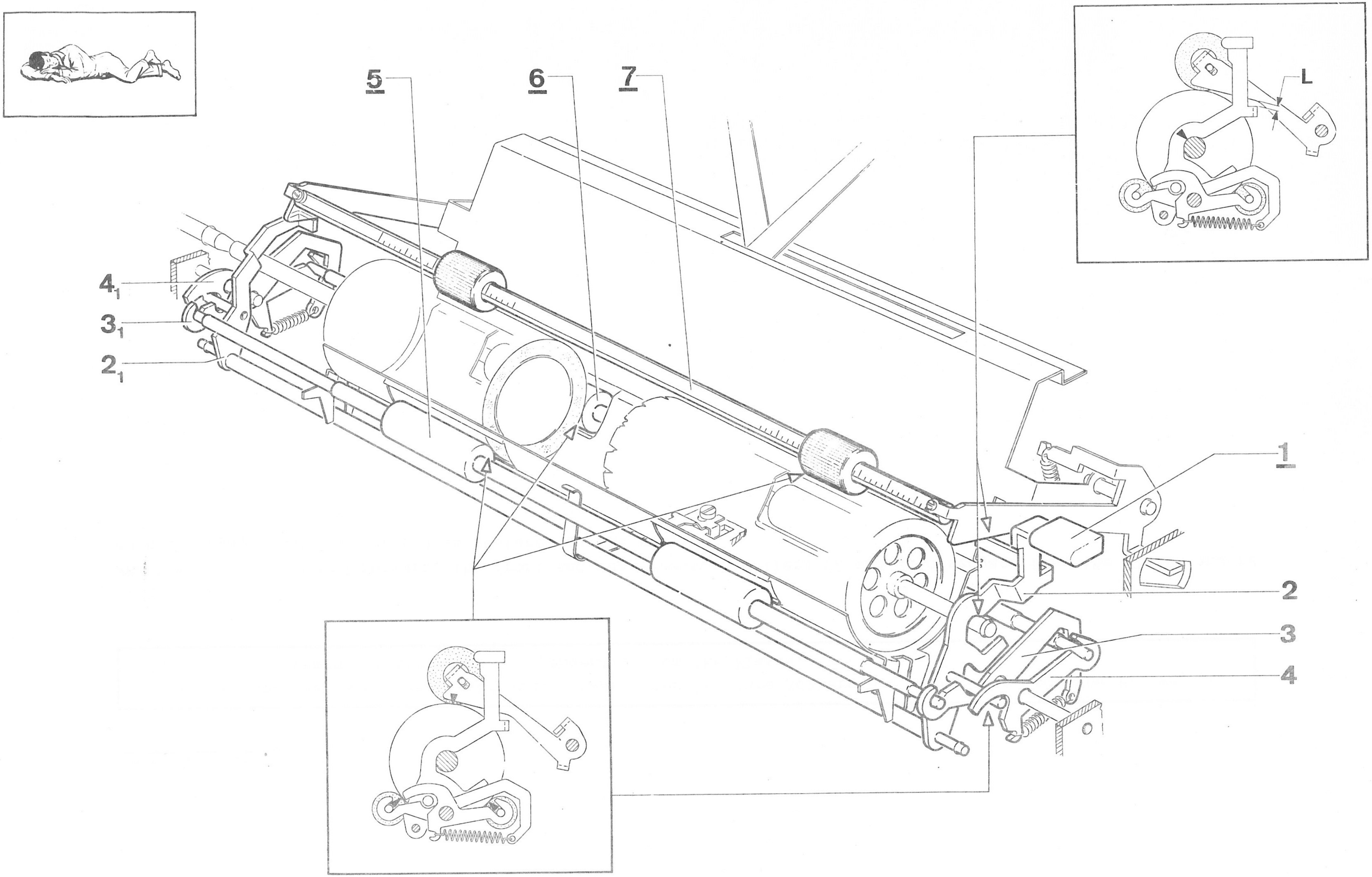
PAPER RELEASE

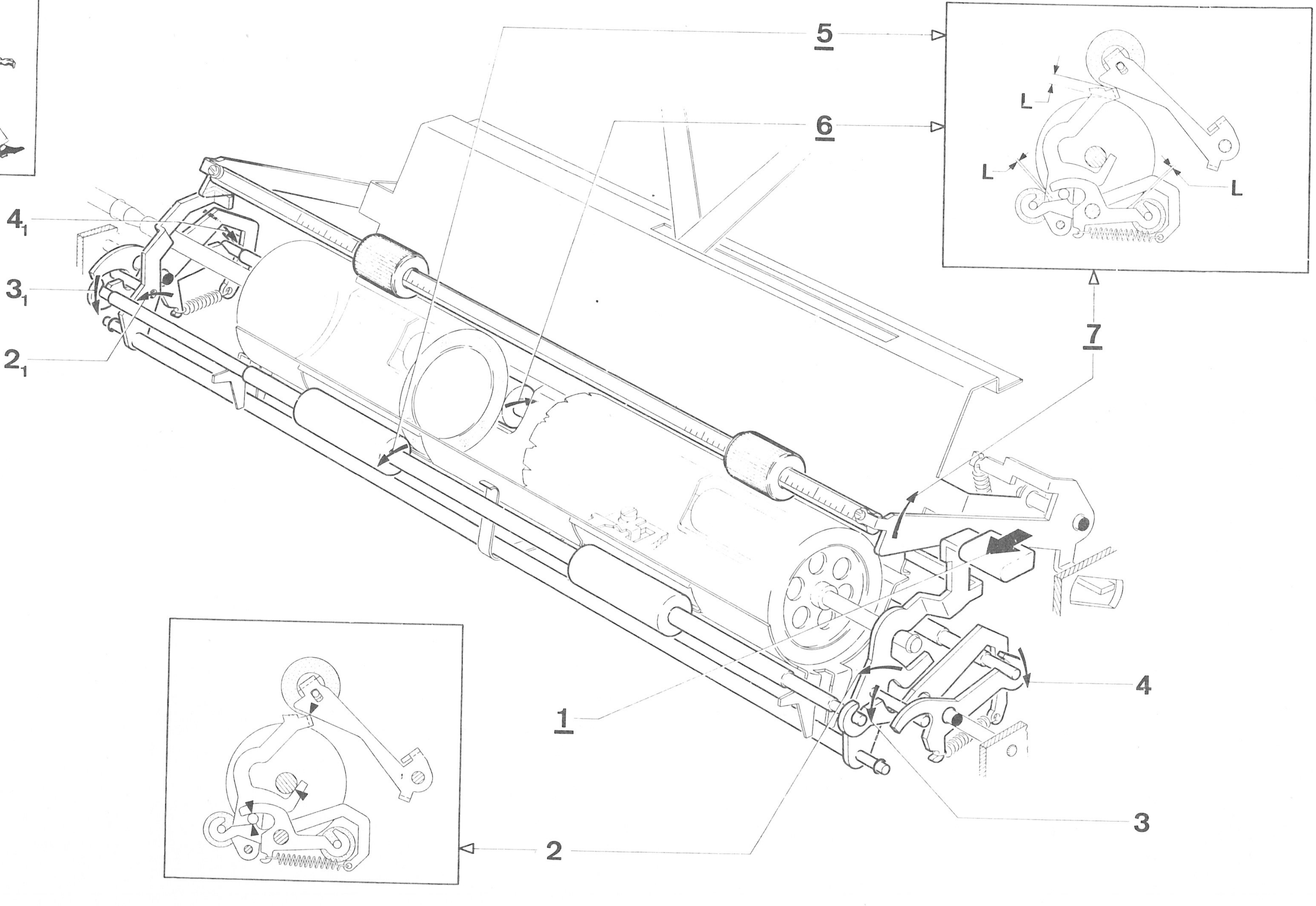


Paper Release

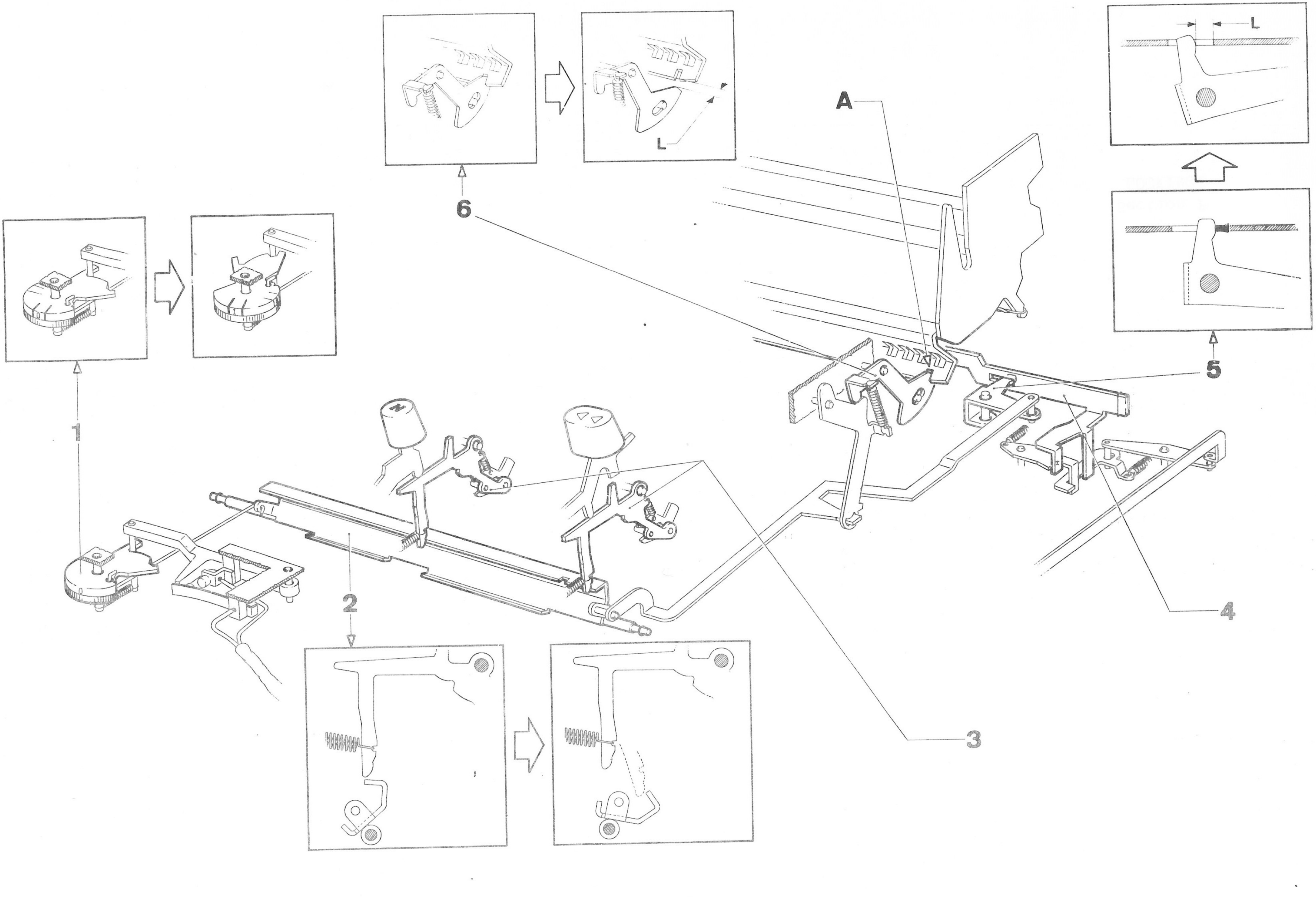
When the Paper Release Lever is brought forward, the Pressure Rollers are moved away from the Platen, permitting the movement of the paper independently from the Platen.

When Lever (1) is moved forward, the front and rear Pressure Rollers (2 and 3) disengage from the Platen and remain disengaged until Lever (1) is restored to the rear.


4₁
3₁
2₁
L


5
6
L
L
L
L
7
4_1
3_1
2_1
1
4
3
2

Section P
LOCKINGS

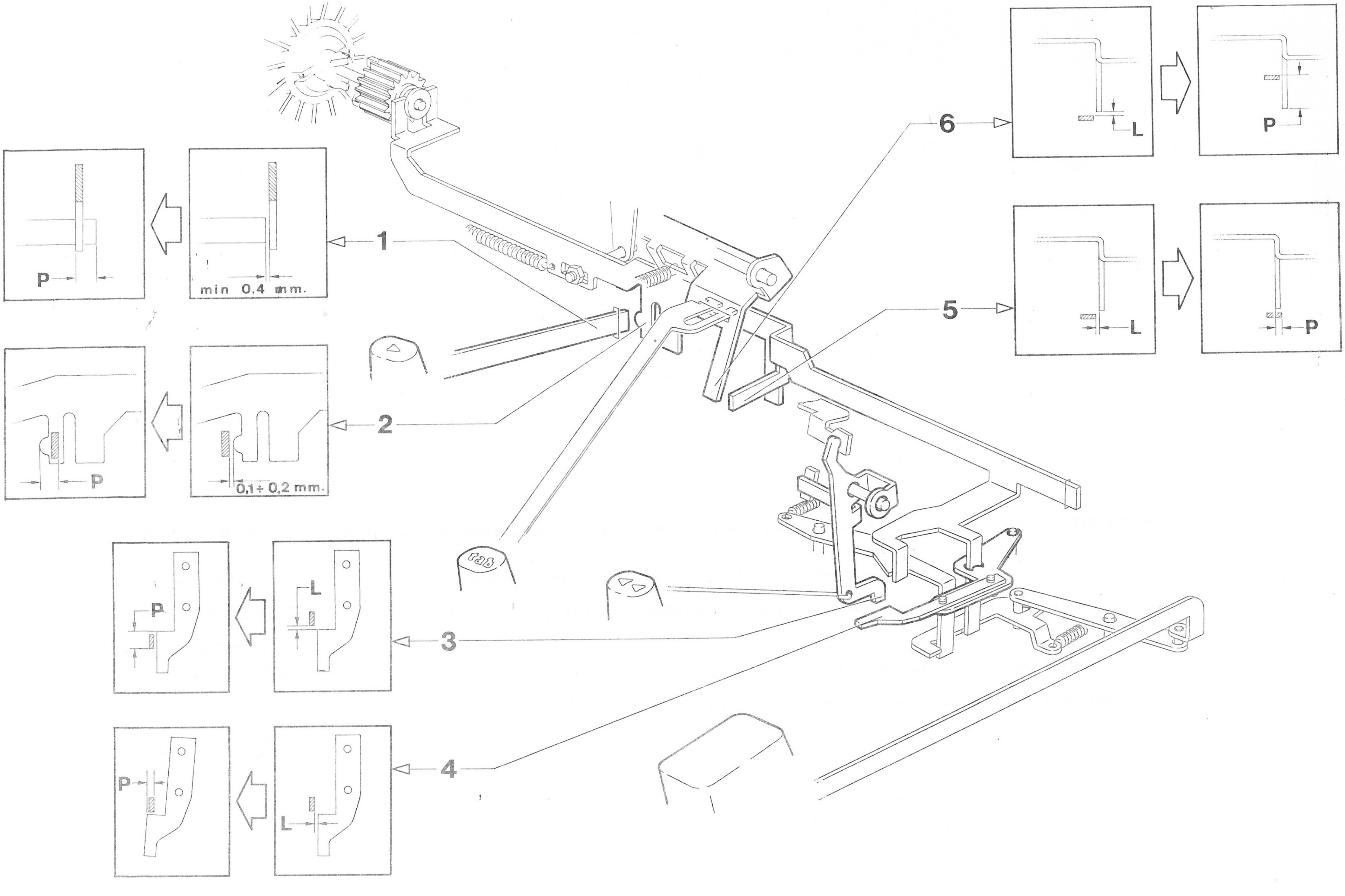

L
L
A

Locking of the Keyboard

When the Motor Switch (1) is in the "OFF" position, the following mechanisms are prevented from operating:

- Character Keys - Back Space	(by Bail (2) which prevents depression of Key Levers (3) (see pages B-6 and H-6))
- Carriage Return	(by Bridge (5) which prevents leftward movement of the Clutch Slider (4)).
- Carriage	(by Plate (6) which enters Slot (A) of the Carriage).

The detail drawings illustrate the conditions of the parts when the Motor Switch is in each of its two positions ("ON" and "OFF").


6
L
P
5
L
P
1
P
min 0,4 mm.
2
P
0,1 ÷ 0,2 mm.
3
P
L
4
P
L

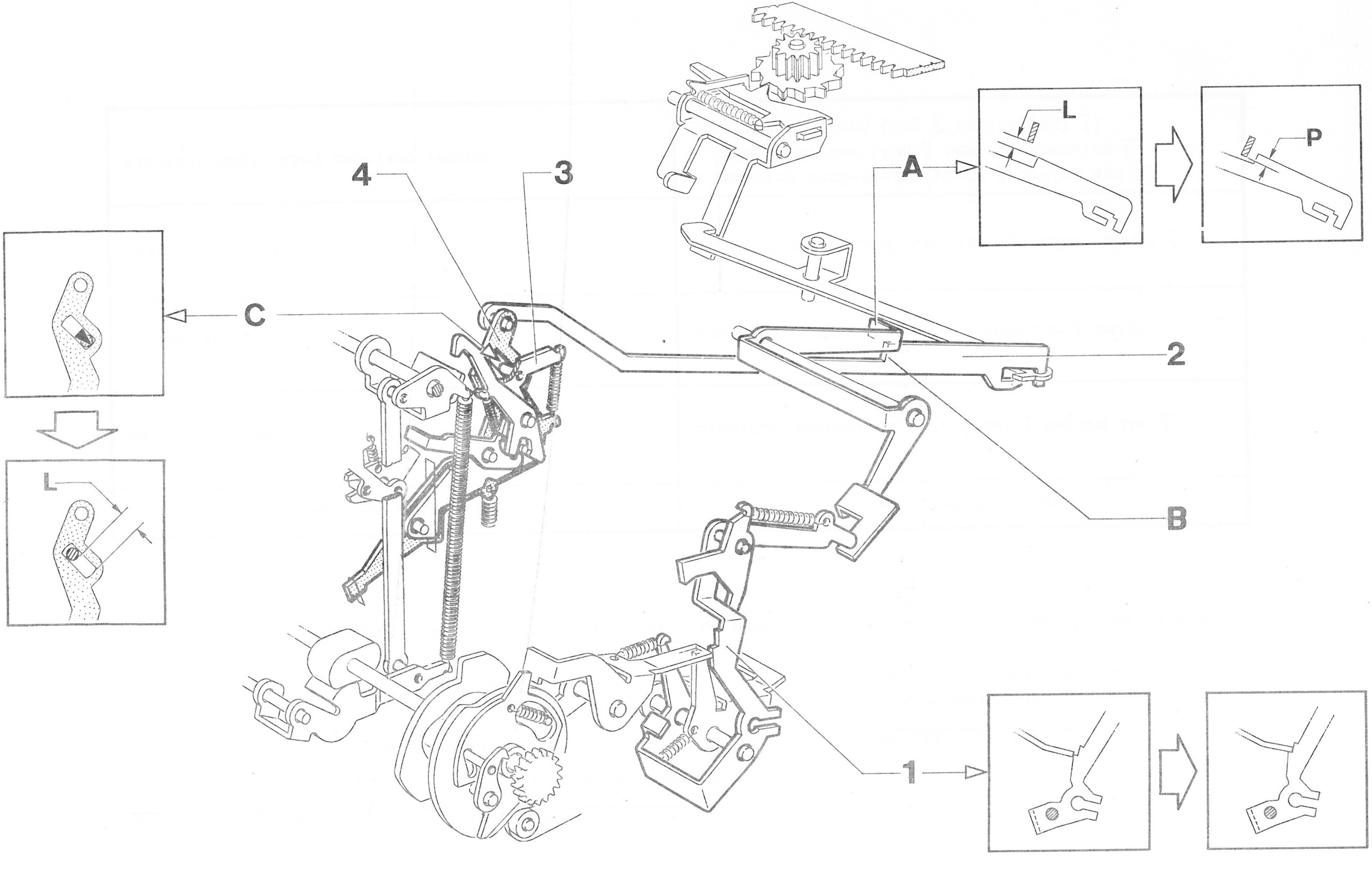
Mutual lockings between carriage feed and carriage return

The following mechanisms are concerned in the carriage operations:

carriage feed	carriage return
- half-space feed	- half-space back
- column aligner	- electric controlled c.r.

When one of the functions cited above is in progress, the other ones are inhibited in the following way:

function in progress	inhibited functions
half-space feed	electric controlled c.r. (pawl 1 before lug 2)
column aligner (tab)	electric controlled c.r. (extension 6 before lug 5)
half-space back	electric controlled c.r. (end 3 before plate 4)
electric controlled carriage return	- one-step back-space (plate 4 behind end 3) - column aligner (lug 5 behind extension 6) - half-space feed (lug 2 behind pawl 1)

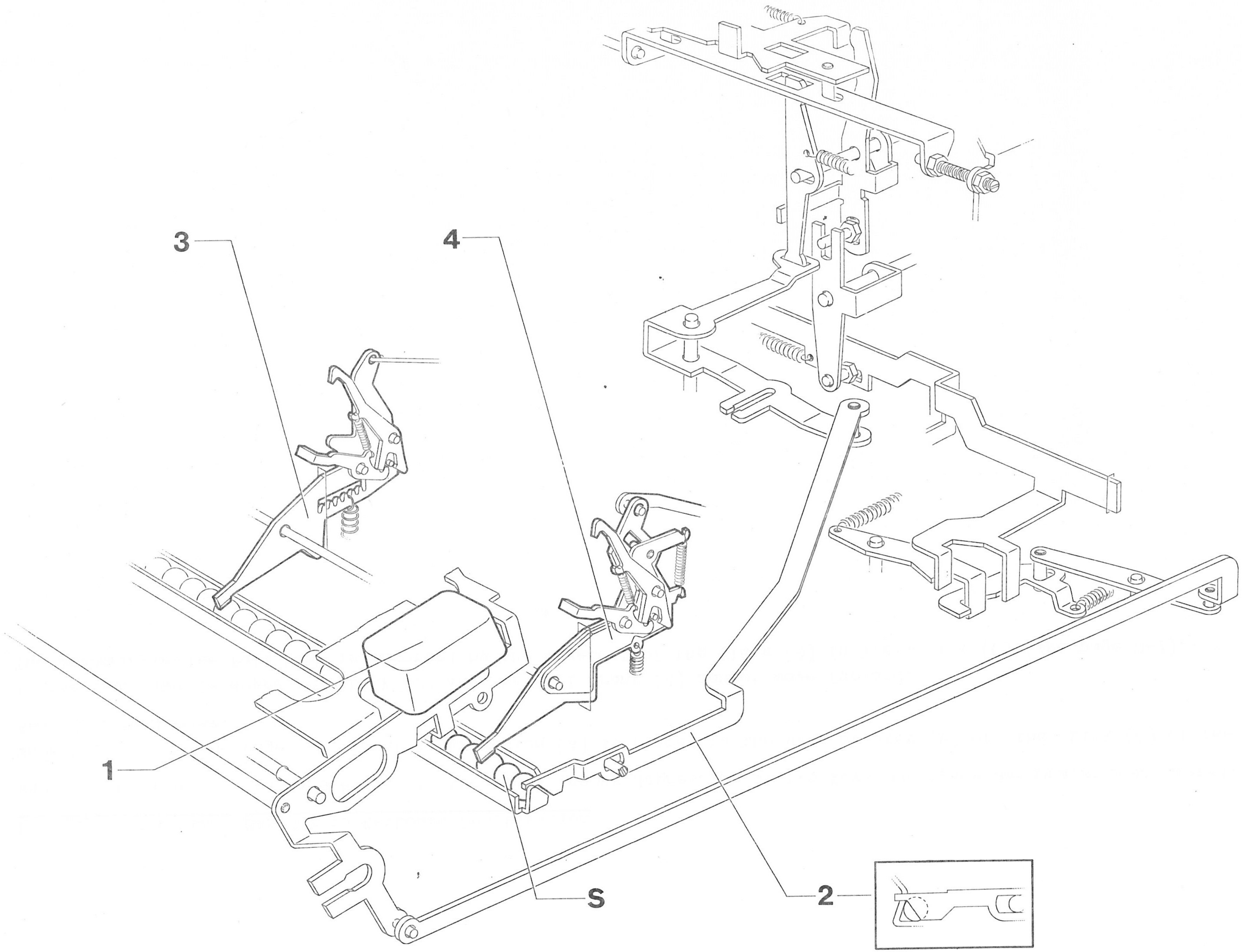

4
3
C
A
L
P
2
B
L
1

Locking of the Space Bar Due to Keyboard Deactivation

When the Keyboard is deactivated due to the simultaneous depression of two Keys, the Space Bar is also deactivated.

When Bridge (1) (see page C-8) rotates, Extension (A) is placed in the path of Step (B) of the Link (2) of the Space Bar Mechanism.

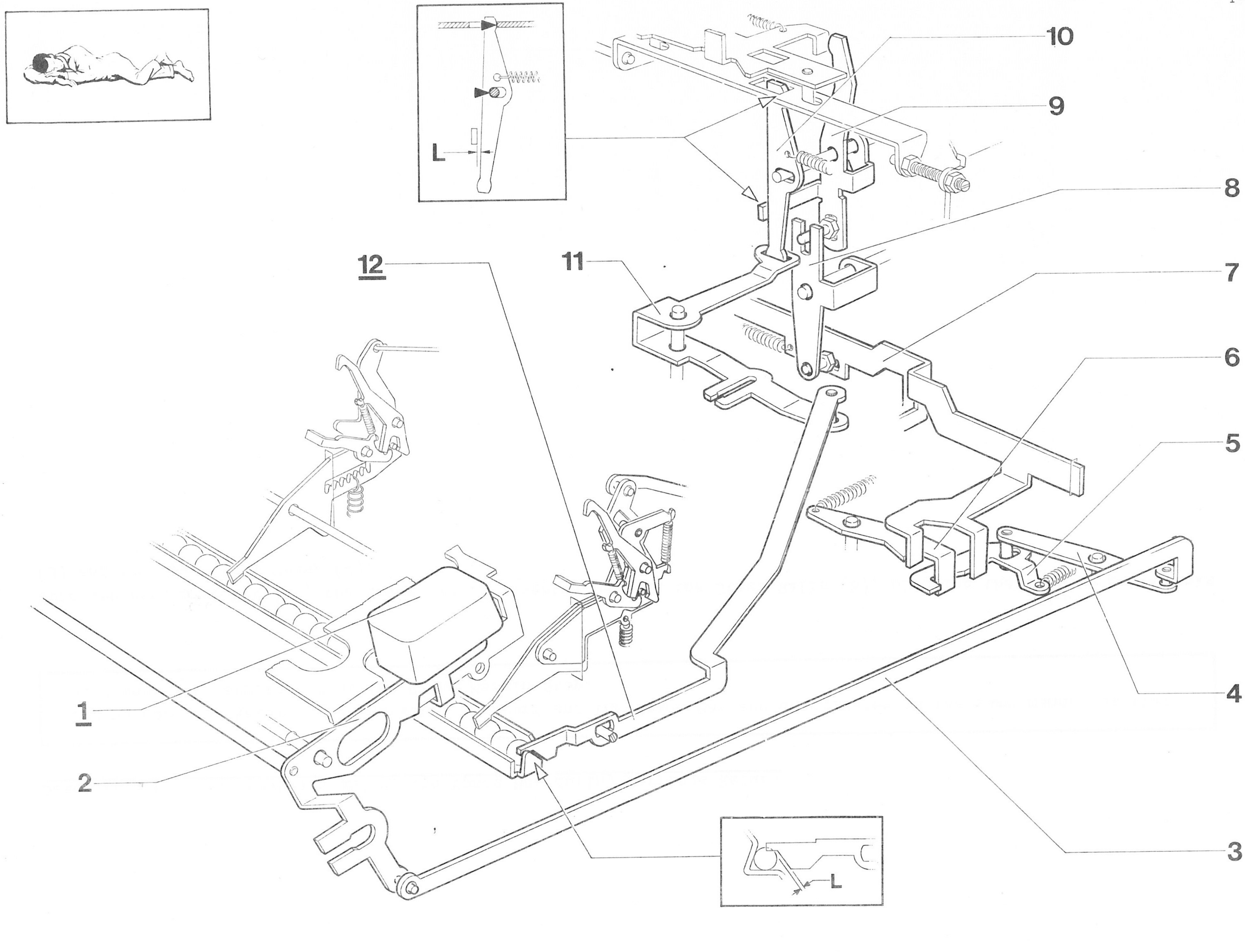
If the Space Bar is depressed, Link (2) and the Bell Crank (4) cannot move forward.
The movement of the Pull Link is absorbed by the movement of the Plate (3) in Yield Slot (C) (see page G-7).

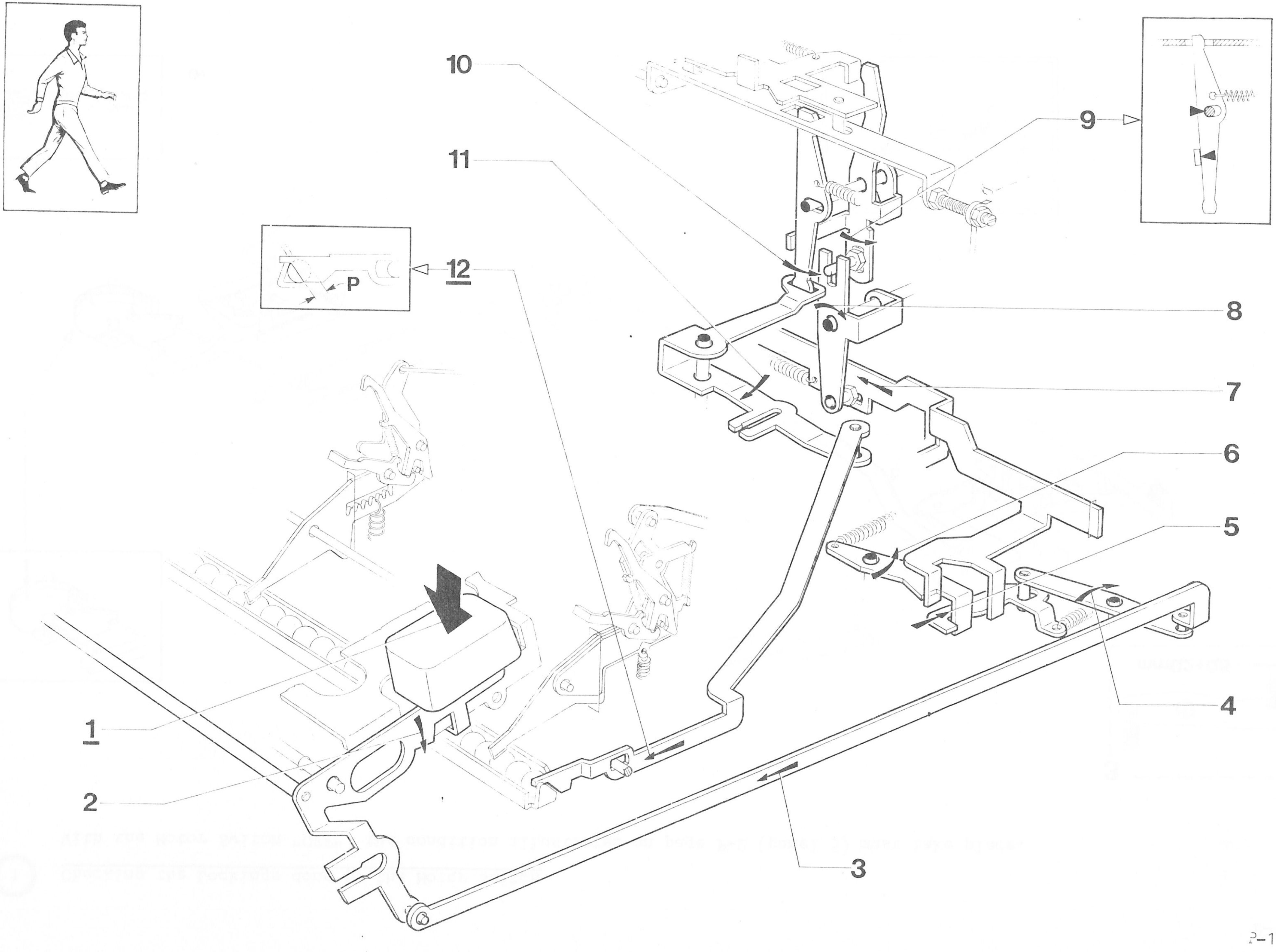

S

Deactivation of the Keyboard and of the Space Bar during Carriage Return

During Carriage Return, the Character Keyboard and the Space Bar are deactivated in the same manner as that used when the Carriage is at the Right Margin Stop.

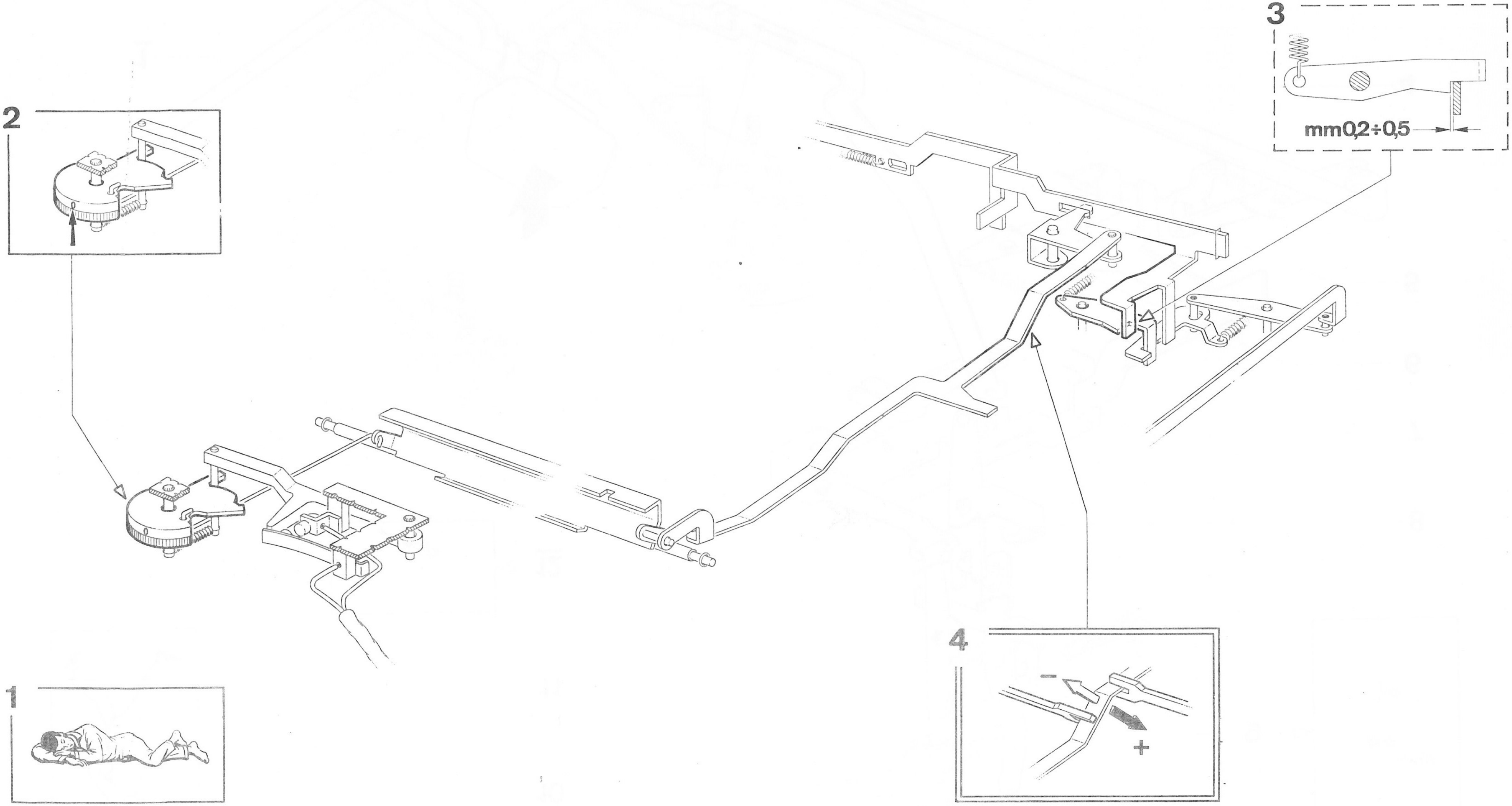
Upon depression of Key (1), the Lever (2) is inserted between the Steel Balls (S), blocking the Type Bar Bell Cranks (3) and the Space Bell Crank (4).


L
L


P

① Checking the Lockings done by the Motor Switch

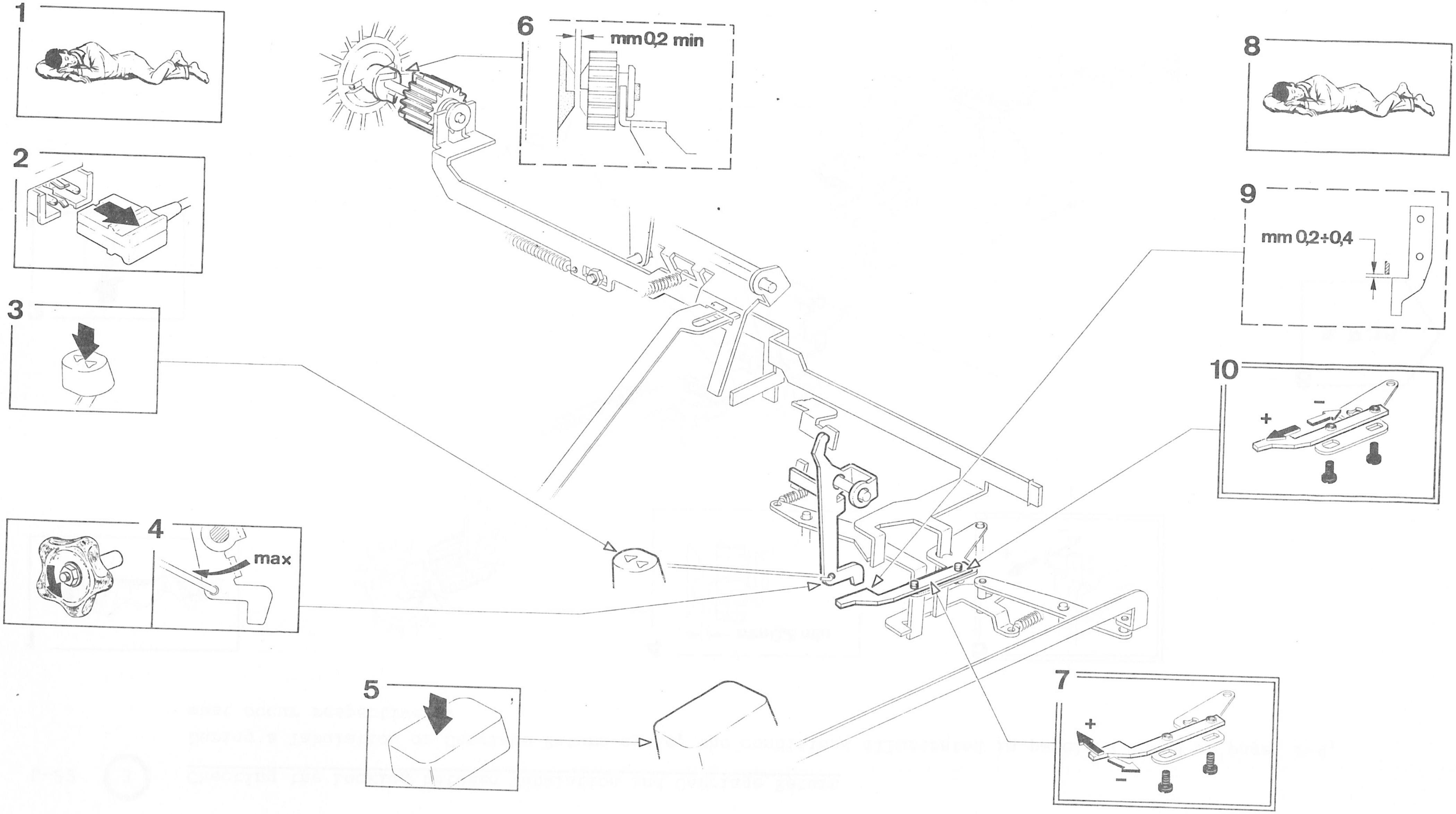
With the Motor Switch "OFF", the condition illustrated on page P-2 (panel 5) must take place.



L-22 ②

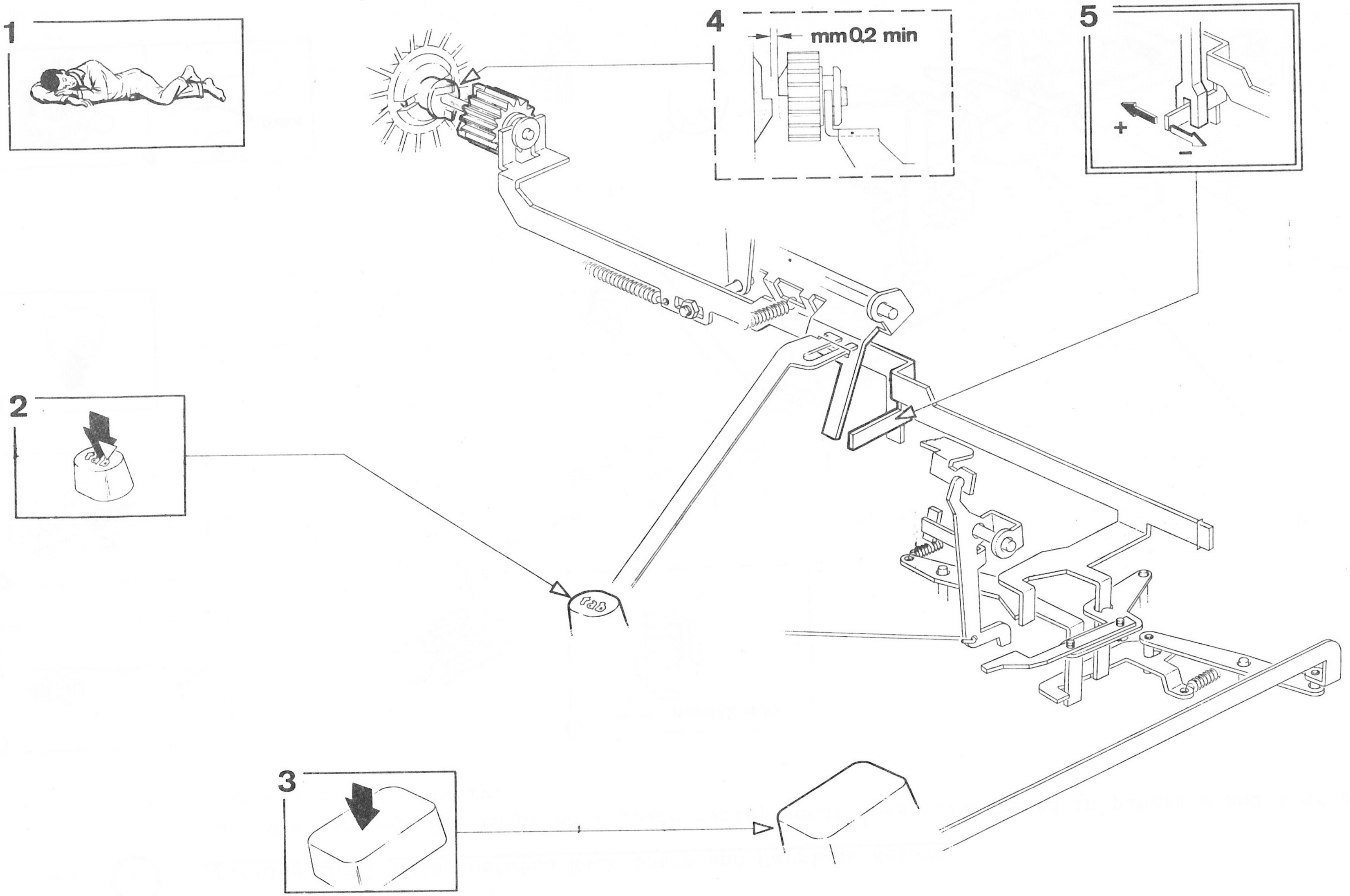
Checking the Locking between Back Space and Carriage Return

During a Carriage Return or Back Space cycle, conditions illustrated in panels 2 and 1 of page P-4 must take place respectively.


1
2
3
4
max
5
6
mm 0,2 min
7
+
−
8
9
mm 0,2÷0,4
10
+
−

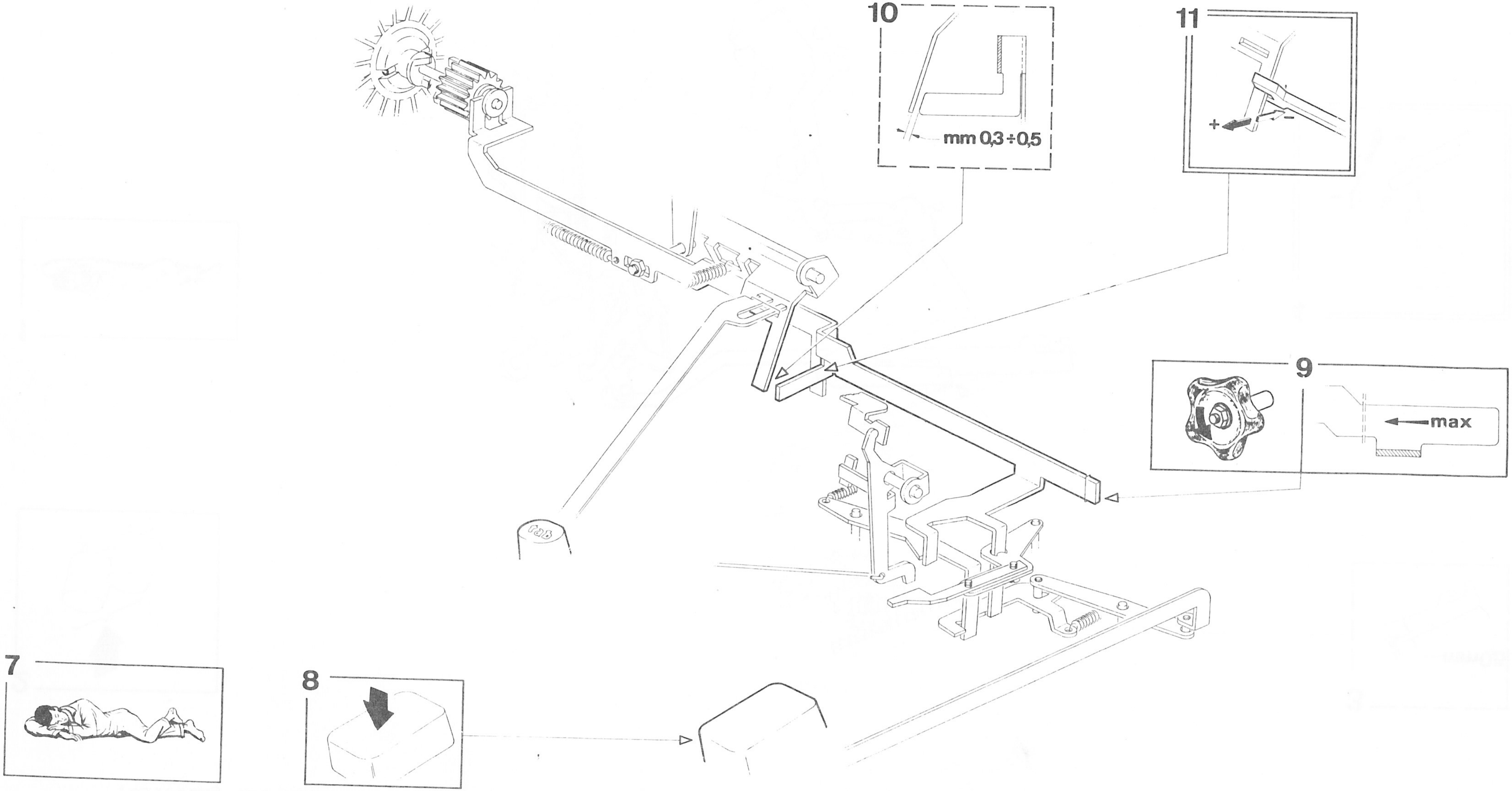
L-22 ③ Checking the Locking between Tabulation and Carriage Return

During a Tabulation or Carriage Return cycle, the conditions illustrated in panels 4 and 3 of page P-4, must occur respectively.



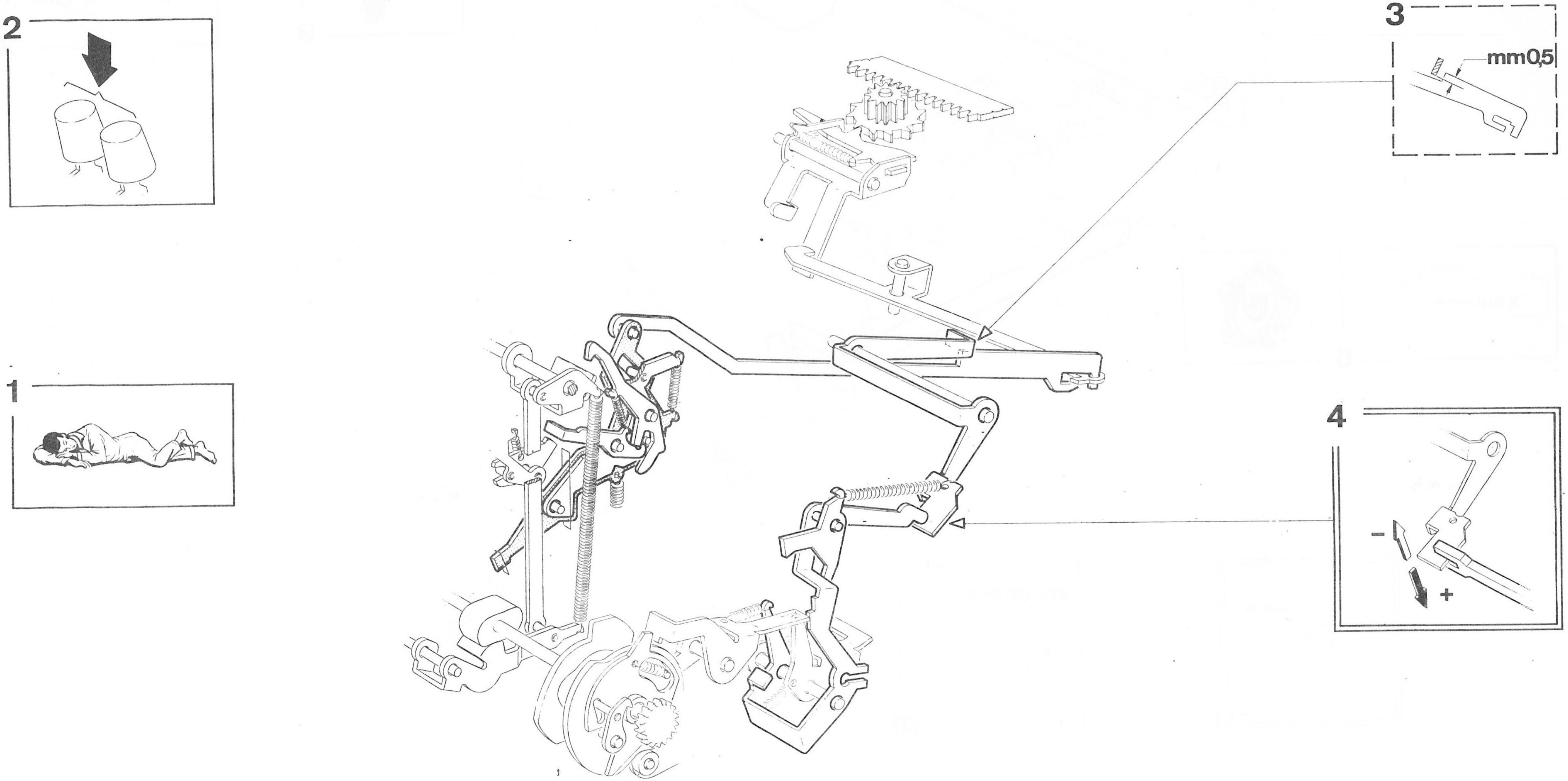
6
% P-15

Checking the Locking between Tabulation and Carriage Return (continued)


10
mm 0,3÷0,5
11
+
-
9
max
tab
7
8

④ Checking the Locking of the Space Bar following the depression of two keys simultaneously

Following the simultaneous depression of two keys, the conditions illustrated on page P-6 (panel A) must occur.



⑤

Checking Keyboard Deactivation during Carriage Return

During Carriage Return, the conditions illustrated on page P-11, must occur.